

MEDICINAL EFFECTS,
OF
FACTITIOUS AIRS;

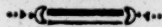
AS OBSERVED OR FELT BY

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JOHN CARMICHAEL, M. D.
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And Mr. CLAYFIELD, *on a new*
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CONSIDERATIONS
ON THE
MEDICINAL USE
AND
PRODUCTION
OF
FACTITIOUS AIRS.

BY
THOMAS BEDDOES, M. D.

AND
JAMES WATT, *Engineer.*

—◆—
PART III.
—◆—

BRISTOL:

PRINTED BY BULGIN AND ROSSER;

For J. JOHNSON, in St. Paul's Church-Yard, London.

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1795.

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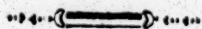
THE

BRITISH MUSEUM



THIS letter was not in my hands till those which follow it were printed. The sagacious writer, however, communicates matters so worthy of regard, that I am glad the post of honour, where it will have the fresh attention of the reader, should have fallen to its lot.

T. B.



*Letter from Sir JEREMIAH MORRISON, Bart. M.D.
to Dr. DANIEL LORIMER RENSHAW.*

My long-esteemed Lorimer,

WHO so well as you can tell how often the soul of your octogenarian friend has been fore at the scandals of the times? ABSURDITY, I have frequently thought, set out on her travels soon after we started from College together (I to superior wealth and consideration perhaps, you to rural ease and a life of less contention) and she has nearly completed the round of medical erudition. I see, as I am apt to say, and I foresee. I see the degradation of our art, and I foresee its extinction. I remember the day when it had solidity—not without solemnity. I have lived till alas! I may repeat after the Poet

A

—Miscuit

Miscuit ima
Summis longa dies.

All is now levity, doubt, distraction, chaos. Does not the Apothecary tread on the very heels of the Doctor; or rather does he not carry himself as *hail-fellow-well met*! Now if the *dispenser* turn *prescriber*, will not the *prescriber*, I pray you, be necessitated by and by to turn *dispenser* in his own defence? Where will the dignity of our faculty and function be then?—But this is precisely what I predicted. You must recollect it—I am sure you must—It was when certain coxcombs, unworthy to be saluted by us as *brethren*, threw aside the cane, the peruke, and the other distinguishing insignia of the profession. Well, what comes next? did I not anticipate that also? To a change of dress succeeds a change of deportment. The flippancy of folly introduces the familiar fashion of making the very patient a party to the prescription---This they call *openness, candour*, but you and I have never dealt in any such openness. We have upheld the severity of a graver age. We never gave into this laxity of practice. Had Boerhaave himself given into it, should we ever, I pray, have numbered the *crumb-of-bread pill*, among that great man's happiest inventions?

Seeing

Seeing into what confusion things have run, why should we be surprised if the *licentiate* comport himself as if he were on a par with the *fellow*? Why wonder, that we who have been matured in the regular discipline of episcopalian universities, should be held in scarce higher estimation than those who have but just had time to lick up a mouthful of the husks of science at some presbyterian seminary in the North?

In our early days, when the practitioner proposed to himself either to attenuate or resolve, or inviscate, or obtund; and when he had opened these his *indications*—not indiscreetly, no, *nequid nimis*—to the proper parties, was not as full reliance placed upon his insight, as if he had given them the cause of the disease to hold in the palm of the hand? Wherever he appeared, did he not inspire reverence? the friends—were they not all expectation; the attendants---all submission; the patient---all resignation? and he felt comfort even in resigning his breath; so decorously was the art exercised in its minutest particulars!

But now—nor will you, my valued hippocratic friend, call me croaker---such has been the effect of *candour*, discussion, and the universal

fal use of the vernacular idiom in medical writings, that I question whether *acrimonies vellicating within, and peccant humours bursting their way out*, will pass much longer, except with gentlemen about our own standing ; though they once could give such universal satisfaction as to the cause of symptoms.

Partial friends—you among the rest—will sometimes persuade me that my tracts are models of classic elegance, too good for a tasteless generation, and therefore not in such high request as they deserve. In point of years you are *a little* the younger man, and *not a little* in point of constitution ; you may therefore live to see an opportunity of bringing the faculty to a juster sense of things. Should you at such a moment (excuse the vanity of my supposition) think it worth while to revive these my lucubrations ; and should friendship induce you to prefix some memorials of the author, extracts from my correspondence on various occasions of alarm, *ne quid ars detrimenti capiat*, may, *possibly*, not be out of season. You will, I flatter myself, find something upon most painful points. I will not, I need not, direct you, to those which I have most happily touched. But do not, I intreat you, omit my kind commendations of those SAGES who have successively undertaken to shew that there is *no*
sedative

sedative virtue in opium, no despumation in the small-pox, no erosive acrimony in pus, no putrefaction of the fluids in any disease, and no vires medicatrices naturæ in any constitution. Digressively, I believe I may have thrown out some strictures upon those other modern teachers, to whom the world is indebted for the information that there is neither *free-will in man, nor phlogiston in charcoal.*

Sed hæc missa faciamus---let this business pass for the present.—*Gravius instat—periculum* shall I add? I should think the term too grave if I had not seen equally contemptible beginnings proceed to an issue, which it gives me a pang to recollect. *You* thought the difficulty of execution quite sufficient, and that we need not interfere to discountenance---But you now see the project, extravagant as it is, can hardly be classed among the *dead-born*. From what I hear—*auribus invitis* you may swear—even at the West end of the town, I am apt to apprehend sometimes that it is creeping on and gaining strength.

I do not argue—arguing on such a subject I consider as *infra dignitatem*. Neither do I descend to invective, though my indignation be indeed, at times, held in with difficulty. But did you know all, you would see that I can

b

strike

strike a home-blow nevertheless. I will explain by an instance or two.

Some short time ago after dispatching the business on hand, and asking of the apothecary a few slight questions about what they call the *yellow bark*, I rose to go to my carriage. At the door of the room where we had been closetted, I stopped, turned round my head, and looking significantly said, “ well, Mr. DRENCH, perhaps
 “ you may deal with an additional species of
 “ cortex; intrusions of this kind must be submit-
 “ ted to; but have you contrived how you are
 “ to put these new *aerial remedies* into saline
 “ draughts?” I walked off without waiting for his answer, but the next time we met, he said he had reported my question at his pharmaceutical club; and that it not only made the matter *clear** to the understanding of the members, but created an hearty laugh into the bargain— You will, I am certain, prefer this mode of attaining the same end to that of ———, the apothecary, who being told that one of his patients had been persuaded to take the vital air, hurried to his house and indignantly demanded whether this was really his determination. “ If
 “ so, says he, “ here is your bill, and if it be
 “ not paid, I will arrest you to-morrow.”—

This

*If Mr. Drench did not flatter his old friend the Baronet, the heads of the members could not be very *clear*, since nothing hinders pharmaceutical gentlemen from dispensing airs and they may be conjoined with drugs.

This was no doubt excellently intended, but was it not too direct? It was the more unlucky, as the patient recovered—by the power of nature beyond a doubt, not by the help of the new-fangled remedy he took.

Well ; soon afterwards, the consumptive daughter of Sir ———, who had been under my care for some weeks, was ordered to the Hotwells. Sir ——— asked if he should consult ———, naming the man, out of whose hands, I am most decidedly of opinion, that all physicians, who have the state and stability of their profession at heart, should unite to keep patients. “ *To be sure,*” I replied, the disease “ *is always fatal. It is, in truth,* the very “ *scourge of our island. Would to God* some “ *better means were devised—Researches for* “ *this purpose are out of all question* laudable. “ *I most heartily wish them success.*” Having thus tuned their minds to confidence with my key of candour, “ *but would you, Sir ———,*” added I emphatically, “ *or you, my lady, have* “ *experiments made on your daughter?*” My lady shuddered at the question ; she even started, nor could her countenance have expressed more horror, if she had actually beheld her daughter in the hands of an assassin. I will
answer

answer for it, no *experiment* is performed on this patient.

So much---and enough for example's sake. A great deal more occurs. The topic is fertile---but *verbum sapienti*.---The new practice will be applied to desperate cases principally ; and as it can never save all the dying, you may conceive we shall have plenty of texts for *useful* comments ; for it is always our own fault if those who employ *new* remedies without effect, do not appear to disadvantage, though *we* can do no better with the *old*. All depends on the face we put upon the matter.

Then you know there is the topic of *inexperience*---on this *we* may launch out. We may call aloud for facts, and all the while reject any that shall be offered. Naming no names---remember that---let us use strong designations, as *speculatists, enthusiasts, high-flyers*. Such language, in the proper tone, will hurry away the mind of the hearer, in spite both of his previous conviction and of the guarded terms in which *they* may have expressed themselves.—— Besides how easy is it to set *Rumour* at work ! And if we could condescend to look upon *them* as adversaries, what would this be but just retaliation ? for you may observe in their publications an insolent neglect of us, who are at
the

the head of the profession ; nothing soothing, nothing conciliatory---no acknowledgment of our superior sagacity---no deference to our experience. On the contrary, appeals to common sense---a design to take public opinion by storm---in short a spirit that requires no less to be repressed than it deserves to be reprehended.

I had hoped to enclose, according to your pressing request, the lines, ending

PROCEED, high-toned enthusiast ! coax mankind
 With idiot mouth to gape and suck the wind ;
 To each forsaken belle and faded beau,
 In Hope's gay glass alluring visions shew.
 Teach in terse phrase how *chemic airs* can spread
 O'er the wan cheek the rose's opening red :
 Smooth the dull brow : new scoop the dimpled cell
 Where once a smiling Cupid loved to dwell :
 In the dim orb the glance of youth relume,
 And o'er the features breathe Promethean bloom.
 Nor boast *thy airs* cosmetic powers alone :
 Disease and vanquished Time their virtues own.
Pneumatic art unfixes Cancer's claw,
 And shields the victim doomed to Phthisis' maw.
 See Palsy dance ! his hollows Macies fill,
 And Asthma pace without a puff up hill !

IF but three thousand pounds obey thy call,
 Mankind shall mourn no more old Adam's fall.
 Thenceforward—blooming through a second spring—
 Tenfold the race assigned by Israel's King
 Eve's half-immortal progeny shall run
 And new METHUSALEMS surprise the sun !

---But

(x)

——But you must administer a lenitive to your curiosity. For my stiff old jade mounts slowly up the steeps of Parnassus. I am every now and then as much puzzled for a rhyme, as a raw officinal recruit to lay his hand on the right box. Farewell! a friendship of fifty years cannot require valedictory asseverations.

JERE. MORRISON.

June, 1795.

2 NO 64

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2 NO 64

CASES
IN ELUCIDATION
OF THE
MEDICINAL EFFECTS
OF
FACTITIOUS AIRS.

HAVING been informed that SIR WM. CHAMBERS, when labouring under the pressure of unspeakable distress, had derived more than present relief from oxygene air, I requested from him an account of the effects he had experienced from its use. In the 2d Ed. of my CONSIDERATIONS, p. 158. I have related my observations in a case of dropsy of the chest. In this case, oxygene air seemed repeatedly to remove the nausea, and for a short time the difficulty of breathing. But it had no effect in emptying the cellular substance of its water, or preventing its accumulation after it had been evacuated by fox-glove.

This is one of those diseases in which I most wish for rooms filled with modified air; as from the diminished capacity of the air-cells, an atmosphere with more oxygene would only bring the patients to an equality with healthy persons, in respect to the quantity of oxygene acting upon the blood, during its passage through the lungs.

T. B.

B

Letter

*Letter from SIR WILLIAM CHAMBERS, Knight of
the Polar Star, F. A. S. &c. &c.*

June 20, 1795.

SIR,

AS every person of a benevolent mind and enlarged understanding must approve of the design of those gentlemen, who are endeavouring from a philosophic induction, to introduce aerial remedies for the removal of otherwise incurable diseases, and as my case appears such as to demonstrate the efficacy of the vital air in a disorder, that has hitherto resisted the ablest practitioners in physic, I will attempt, as far as lies in my power, to describe my situation, and the effects, which I experienced from this new remedy; I shall be truly happy, should the same advantages be felt by others under similar circumstances.

Previous to my coming under Dr. Thornton's care, every means which extensive experience and great abilities could suggest, had been tried by my friend Dr. Turton. My complaint seemed to be of such a nature, as to baffle all the powers of art. I was at that time hardly able to move from one chair to another. It was with the utmost difficulty I could get up stairs. I had water in both my lower extremities, and great oppression on my breath, so that when I lay down to sleep, I was frequently obliged to start up and resume an upright posture, to prevent myself from being, as it were, suffocated. My nights were bad, my appetite gone, and for months I had not been able to swallow any thing solid. Indeed I had given myself up as a lost man, until I heard of the vital air, which my
friends

friends told me had done such extraordinary things in medicine and surgery. I conceived that as the application was to the seat of the disease, it promised more than most other remedies, and accordingly about ten months back I began the inhalation of this air. Dr. Thornton approved of the plan of medicine I was pursuing, which was, bitters to strengthen the system, and as occasion might require, a warm laxative pill; these were therefore continued. After a few weeks' trial of this new mode of treatment by the vital air, the above medicines being continued, my strength was so far recruited, that from my own reckoning, I could walk upwards of two miles; my ankles did not pit; my breathing was relieved; my appetite improved and my countenance so much mended; that all my friends, together with my physician, congratulated me on my recovery. I was able to pay my respects to his Majesty, who complimented me much on my good looks, and made many inquiries respecting the vital air. I was enabled regularly to attend the Board. But I had to battle through such a winter, as few at my time of life have been able to support. The influenza, which was general, was a great drawback to my full restoration, as the vital air was obliged to be desisted from at that time, and recourse was had to evacuates, cooling medicines, blisters, cupping, and a low diet. But this, together with several colds, that have occasionally attacked me, has, in my mind, only manifested the more the efficacy of the vital air in my complaint, for as soon as it has been judged prudent to have again recourse to the vital air, the symptoms that had gained ground during the intermission, have been as constantly subdued, and my friend Dr. Turton has told me, " that I could not do better

" than

“ than to go back to the vital air,” to which I do not hesitate to ascribe my present freedom from oppressive respiration, comfortable nights, clean ancles, power of eating solids, with appetite, and in a few words, as much return of health, as a person at my time of life (85) has reason to expect after such an attack, and I think abundantly sufficient to be thankful for, and to prove the virtue of the vital air in all complaints of this nature ; but this I must leave to you, Dr. Thornton, and others to determine, to whom I sincerely wish every success in your laudable attempts to lessen the afflictions of mankind, and have the honor to be,

Dear Sir,

Your obedient humble Servant,

WILLIAM CHAMBERS.

To Dr Beddoes.

Observations on this Case, by DR. THORNTON.

1. AS the average dose was 1,500 cubic inches of atmospheric air, super-oxygenated, at first by one, and afterwards by two quarts of *vital air*; does not this case of Anasarca prove, that such a mixture has no contemptible power?

2. As the super-oxygenated air was inhaled at first, for near two months successively, once each day; and afterwards for eight months, three or four times a week, it seems to prove, that this remedy may be employed for a great length of time without injury; care being taken to leave it off when any accidental inflammatory attack supervenes, and when the tongue has a white appearance, in the same way as bark and all other tonic and exciting remedies would be omitted under similar indications.

3. After the inhalation of the super-oxygenated air (the quantity of air usually drawn into the lungs being 4 pints at a forced inspiration) a sense of warmth was diffused throughout the body; Sir William Chambers frequently noticed that the extremities of his fingers, which were before colourless, were suffused with red blood; the small vessels on the surface of the cheeks became more florid; the veins filled out; and the pulse which was 90, and weak, rose in fulness, but diminished in quantity, from six to ten in a minute.

4. Is the removal of the Anasarca; the recovery of muscular power; the increase of strength; to be ascribed solely to the inhalation of a super-oxygenated air?—to the power of tonic remedies?—or to both conjointly?

To

To the last opinion, from an experience of above two years in the pneumatic remedies, I subscribe, but this will be more satisfactorily determined by your *Pneumatic Institution*.

5. Was not a deficiency of vital air in the system, shewn not only from the nature of this disease; from incapacity for muscular action; coldness of the extremities; defect of colour, which was natural to the cheeks in the state of health; but also from the tremulous motion of the hand, when holding the tube connected with the machine for the inhalation of the air; for these went off in proportion as the system became oxygenated.

6. As the usual remedies are employed, which the prudent Physician prescribes according to the circumstances of the case; and as the patient loses no chance in the experiment, and the super-oxygenated air in a state of great dilution, is proved to be by no means a dangerous remedy; have not practitioners great reason for adopting in future *this new power* under similar circumstances?

R. I. T.

7. As patients in general, though warned to the contrary, make greater efforts of respiration, when they draw the air out of a reservoir, does not the same quantity of atmospheric air oxygenate the system more in this mode of administering it than in ordinary breathing? and may not the exercise attending this mode of respiration be of service? This last circumstance deserves attention.

T. B.

Letter

Letter from SAMUEL HILL, Esq.

June, 20, 1795, Great Suffolk-street.

SIR,

I ACKNOWLEDGE the honour of your letter, and make not the smallest hesitation in complying with your request.

Mary Leucraft, the daughter of a tenant of mine, had been ill above three years. Every thing had been tried for her recovery, as far as her mother's resources would allow of, but her body still remained greatly swelled, and she had that fallow, and, if I may be allowed the expression, flabby appearance, characteristic of a person in the worst state of health. As her disorder had been all along pronounced dropsy, and she had received no benefit from medicine, her mother told me, she had given up every hope of ever seeing her child recover; but well knowing the humanity of Dr. Thornton, and thinking, that this case would it successful, do great credit to the aerial remedy; I sent her with a letter of recommendation to that Physician. She was accepted as a patient, and I soon heard she was getting better, and when I saw her, I was convinced that such was the case; but her mother at this time falling sick, and being unable to bring her daughter to Dr. Thornton, or to spare her from home, she again relapsed into her former condition of ill health. However, upon the recovery of her mother, she renewed her daily attendance.

In

In about six weeks she came to return me, and the ladies belonging to my family, thanks; and we were, I must confess all of us astonished at the change; for from being an object of pity, she was now become of her proper size; she said she had an appetite; slept well; and she had a most blooming complexion.

I have the honour to be, Sir,

With the greatest respect,

Your obedient humble Servant,

SAMUEL HILL.

To Dr. Beddoes.

Observations by DR. THORNTON.

IN this case, I evacuated the bowels with rhubarb and cream of tartar, to discharge the water and accumulate irritability in the absorbent and inhalant vessels, at which time I enjoined the sparest mode of living. Afterwards, I gave bark and stimulants, and ordered a generous and plentiful diet, and my patient inhaled 900 cubic inches of air, super-oxygenated by 2 quarts of vital air. By this alteration (to the propriety of which measure the Brunonians, or rather the disciples of yourself and Dr. Darwin will readily assent) my patient was quickly restored to health, as the above letter testifies. But how far the super-oxygenated air concurred in this cure, comparative trials must determine.

Extract

*Extract of a Letter from DR. THORNTON,
On Hydrocephalus.*

November 15, 1795.

THOMAS MEAD, a lad, 13 years of age, was six weeks in St. Thomas's Hospital, under the care of Dr. Fordyce. We cannot doubt an instant, but that every proper remedy had been tried before he was discharged thence *incurable*. Being blind, he next came under the care of my friends, Messrs. Wathen and Phipps, who with real love for the improvement of medical science, and a wish to lessen the miseries of suffering humanity, sent him to me, as a fit object for the trial of the pneumatic remedy. The pupils of the eye were greatly dilated, the pulse was sluggish, and he had fits, which were unlike those of epilepsy or hysteria, and usually occurred, at uncertain periods, once or twice a week. These symptoms we know denote water in the head. He inhaled the vital air in the dose of two quarts to thirty-six of common air, and in three days he began to distinguish objects. He then underwent a course of mercury, took bark and bitters, and inhaled the super-oxygenated air. His sight daily became sensibly clearer, the pupils of the eye were less dilated, and he had no recurrence of his fits. His pulse was increased in quantity and vigour. But during these favourable signs, the weather set in extremely bad, and the lad living at a distance from me in the country, he left off attending for some days, and all medicines were in consequence omitted. When the weather became better, in his attempt to visit me, he had a fit on the road, which kept him back a day or two longer, and when I at last saw him, he complained much of

C

great

great weight and pain at his forehead ; he appeared stupid, and had gradually fallen off in his sight. I began to be very apprehensive for his safety, and cautioned the mother to bring the boy regularly each day. The fits, however, recurred, at first once, and then twice a day, with increased violence, and the benefits that were kept up during the last five weeks were now alas, lost for ever.

Observations on this Case.

Did not the recovery of sight in three days during the inhalation of super-oxygenated air arise from the power of this elastic fluid ? and does it not indicate, that it will be of service in this fatal disease ? might not the dropping of so powerful an excitement as the combined operation of exercise, bark, mercury and a super-oxygenated air occasion what Dr. Cullen calls the "collapse" of the system, and in some measure account for the failure in this trial ? or might not the super-oxygenated air, without mercury, conjoined with bark have proved successful ? These interesting points, more extensive experience will, I trust, clear up.

Your's ever,

R. I. THORNTON.

Letter

Letter from DR. REDFEARN.

Lynn, Norfolk, 26th June, 1795.

SIR,

I SEND you the case of Hæmoptysis which I mentioned in my last letter: you will no doubt think it an important one.

I am, Sir, your most obedient Servant,

RICHARD REDFEARN.

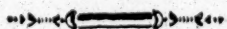
To Dr. Beddoes.

Mr. B. F. Æt. 23, of a florid complexion narrow chest, prominent shoulders, smooth skin, and of a delicate slender form, has been afflicted with hæmoptysis about two years and a half; attended with dyspnœa, cough, a disagreeable sense of burning in the chest, and expectoration of a purulent nature. P. about 100, and invariably accelerated by the hdc. air---Hætic fever was not completely formed; but he had at times a sense of chilliness in the day time with heat towards the evening. He began by taking one quart of hydro-carbonate, diluted with twenty-one quarts of atmospheric air, once a day. From this mixture he experienced much vertigo during its inhalation, and, two hours after dinner, he suddenly became vertiginous, from which, however he soon recovered, although a violent head-ache remained during the rest of the evening.

The following days he only inhaled one pint of hydro-carbonate, mixed with twenty quarts of common air, once a day, which generally affected him with some slight vertigo and tightness over his forehead: the
hydro-

hydro-carbonate was increased gradually to two quarts or more at one dose, but I find it always necessary to begin with the original dose, where the air has been recently generated.

My patient has been persevering in this plan about three months ; and has had no return of hæmorrhage ; his cough and expectoration are very much diminished ; sometimes he does not expectorate more than one table spoonful in the space of three days ; he has also never experienced any of the distressing heats in his chest which harassed him before the administration of the air ; his dyspnœa is perfectly removed, he can ride upon horseback twelve miles without feeling much fatigue ; his appetite is very good and he sleeps well : P. 80, he says he thinks his health is perfectly established.



Extracts of letters from DR. ALDERSON, respecting a case of Chlorosis, a case of Pulmonic Disease, and a cheap Apparatus for the production of elastic fluids.

Hull, May 29, 1795.

DEAR SIR,

I HAVE had under my care a case of apparently approaching phthisis ; the complexion was uncommonly florid ; the patient has perfectly recovered from the long-continued use of hydrogen air.

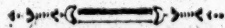
A case of chlorosis has also occurred to me in which steel proved ineffectual without oxygen. The patient
never

never could sleep without her dose of this air, of which she inhaled a quart every night. So great were the beating of the carotids, the anxiety and the sense of drowning, when she was about to lie down, that she was under the necessity of sitting up all night, nothing ever procuring rest, till the oxygen was administered. Then the beatings ceased. She lay down and rested. She continued the air some months. It was assisted by small doses of steel, which she had in vain tried under every formula before. She has ever since been healthy and blooming.

I use the simplest contrivance possible for every kind of air. I will send you a drawing of it, if you think it will be of any service.

I am your's most sincerely,

J. ALDERSON,



June 26, 1795.

DEAR SIR,

MY friend Mr. Mead, who invented the apparatus of which I have now sent you a drawing, and which I have constantly employed, being much engaged in a very interesting pneumatic pursuit, I have necessarily been obliged to postpone to this time my promised account of the cases in which I have successfully employed factitious airs.

I was some time ago called to meet Dr. B. in the case of Miss L. aged 17, who had been long labouring
under

under chlorosis. As my colleague had been for some time administering a variety of very proper tonics, and being at that time persuaded that some preparation of steel would effect a cure, I advised only a different preparation of that mineral, but the change not producing the desired effect, the Doctor ordered some blood to be drawn from the arm, in the hopes that after the evacuation the tonics would have a better effect.—The blood was remarkably pale, and afforded but very little crassamentum indeed ; no alteration took place in the system for the better, she then went to sea, and returned from her voyage somewhat better, but soon after relapsed, and the complaint being now attended with great emaciation, and an uncommon throbbing in the carotids, which upon lying down was so very troublesome as to prevent her sleeping, my assistance was again called for in 1793, and having no prejudices to overcome with her very ingenious father, I immediately proposed the inhalation of oxygen gas, the first effect of which was to take off the throbbing of the arteries, enabling her to lie down and to get quiet sleep, the other effects are concisely related by her father, in his letter to me, of which the enclosed is a copy.

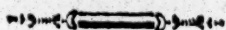
She inhaled every night, by means of the funnel, a quart of oxygen, unmixed with any other air, which was sometimes prepared from nitre, and sometimes from manganese by heat.

Note. It may not be amiss to remark, that no air from nitre ought to be kept for use that comes over before the reort be perfectly luminous, and even then
some

some azotic gas will ascend owing I suppose to the breaking down of a chryſtal, the center of which has not been thoroughly permeated by the light.

I. A.

To Dr. Beddoes.



Letter from MR. LAMBERT, to Dr. ALDERSON.

IT is not neceſſary, Sir, that I ſhould attempt to deſcribe to you the nature of my daughter Elizabeth's complaint or to enumerate the various medicines that had been adminiſtered, prior to your ordering the *pure air*. The immediate effect produced by this, was a conſiderable exhilaration of her ſpirits: in a few days the violent beating in her head greatly abated—the ends of her fingers began to aſſume their natural colour; and by a ſteady perſeverance in the uſe of it for about two or three months together, with the uſe of ſalt of ſteel, from a ſtate of the greateſt debility, and an appearance the moſt unhealthy, ſhe aſſumed her former colour, ſtrength and vigor. With the deepeſt ſenſe of my great obligation to you,

I remain, Sir,

Your very humble Servant,

G. LAMBERT.

Hull, June 5, 1795.

Extract

Extract of a Letter from DR. ALDERSON.

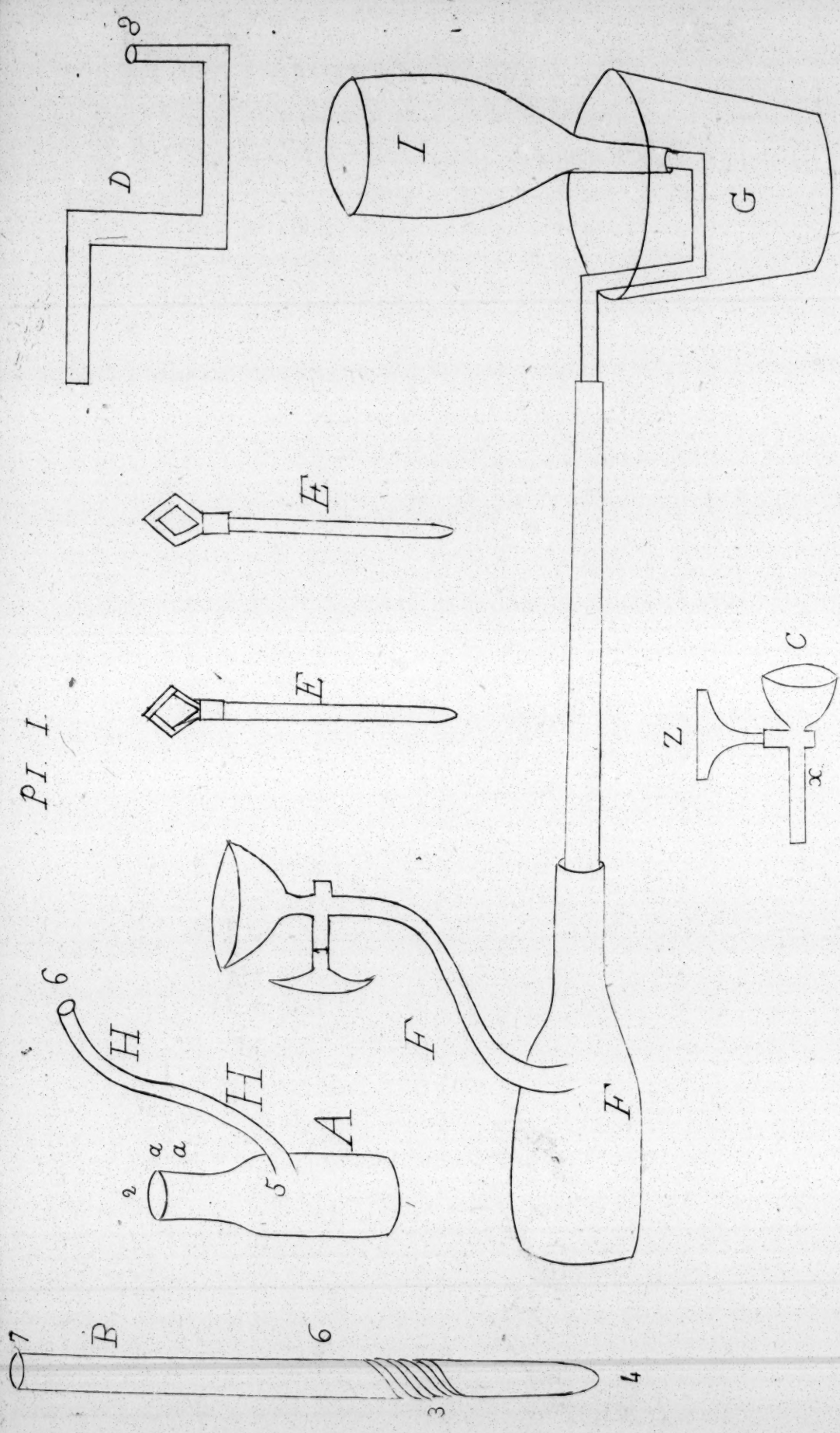
1793.—MISS —— aged 16, had all the symptoms of approaching phthisis, cold tremors about twelve o'clock, fever, heat, and flushing every afternoon, pulse 120, countenance uncommonly florid, breathing rather difficult, cough severe, accompanied with some expectoration; as several of her family had died of consumption, there could be little doubt of the tendency of these symptoms, and after finding nitre, spermaceti, vomits, &c. to have no effect, I advised the inhalation of hydrogen; she daily inhaled a quart of pure hydrogen from water, by every now and then taking an inspiration at the mouth-piece of the tunnel. It frequently occasioned nausea, and even vomiting, but this, I suspect, was occasioned by her every now and then swallowing a portion of it into the stomach. The pulse fell, the flushings and fever subsided, and the whole train of phthisical symptoms left her, but at the expence of her fine florid colour, her countenance having ever since been of a darker tint than before she was ill.

I. A.

*To Dr. Beddoes.**June 5, 1795.**DESCRIPTION*



Pl. I



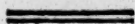
DESCRIPTION of a PNEUMATIC APPARATUS.

PLATE I. A. An iron retort or tube closed at end (1) open at end (2) with a female screw to receive the male screw of the tube or gun-barrel B. at the fig. 3. the position of the screw (3) must be such, that the end (4) may be three inches above the bottom (1).

H. A bent iron tube inserted into A. at (5) which receives the cup with the cock C. at the point (6).

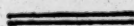
D. A crooked tube inserted into the gun-barrel at the point (7).

E. E. Screw-keys or wrenches, the one fitting A. at *a*. the other B. at *b*.

To use the vessel, fill A. with the substance necessary to produce the species of air required, to a height, three inches from the bottom; put the apparatus together, using a little lute, or flour and water, at the several joints: insert A. between the bars of a common grate, to the dotted line F. F. F. and D. into a pail filled with water, as in fig. *f*. When A. has acquired a red heat, if water be necessary to the production of the air, fill the cup C. with water, turn the cock Z. into such a position that the water may gently *drop* through the tube X. Insert the tube X. with lute, into the tube H. at the point (6) fill a bottle with water and insert it over the end (8) of the tube D. on the pail G. filled with water.—Note. When the water is not to be used shut the cock Z.

D

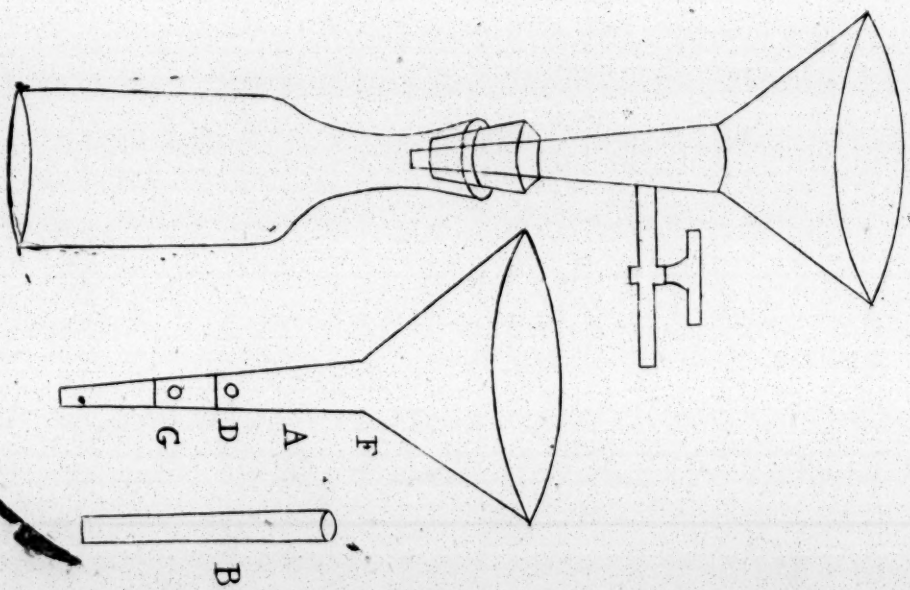
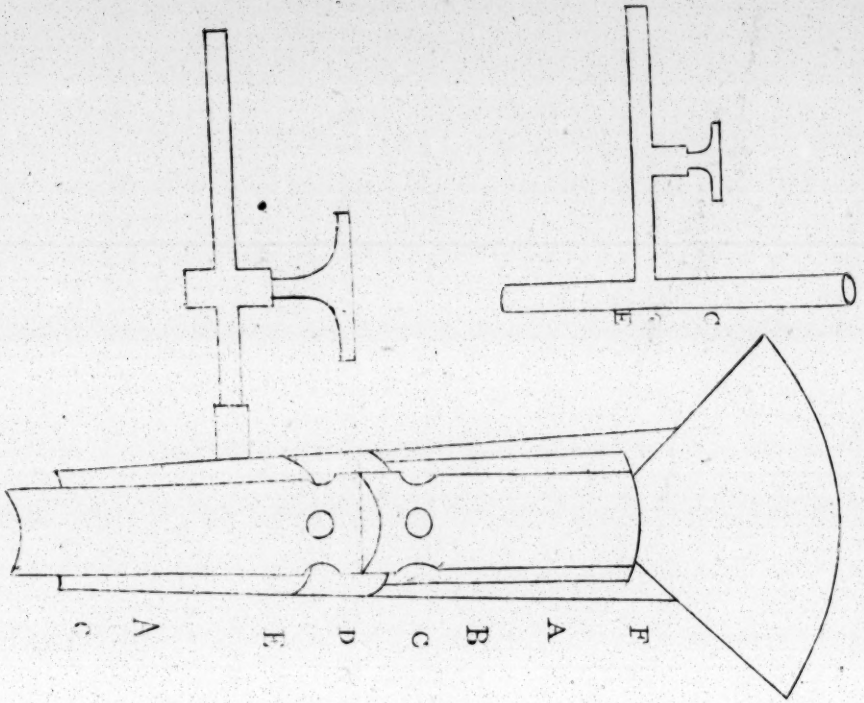
EXPLANATION

EXPLANATION of PLATE II.

A. A funnel with its pipe or tube stopped at D. and perforated above and below with two or three small holes ; round the tube A. is foldered the tube B. left open at top, the tube C. is made to circumscribe the tube B. and to be foldered to the funnel at *f.* and likewise foldered at *g.*

When water is poured into the funnel and the cork inserted into a bottle filled with gas, the water descends through the tube A. till it arrives at the division or section D. it then flows through the small holes at *a.* and ascends between the tubes A. and B. flows over the top of B. and descends again between the tubes B. and C. till it arrives at *g.* (where it regains the tube through an opening above *g.*) and thence into the bottle : as the water goes in the air escapes between the tubes A. and C. through the cock into the mouth-piece ; the lower end of C. is made to perforate a cork which is properly attached to it, and which secures it air-tight into the neck of a common bottle.

The whole apparatus may be made for less than a guinea, and may be introduced to the bedside of the patient if necessary, for I have had a cask filled instead of a bottle, and placed upon a chair ; by turning the cock, the patient may take an inspiration whenever he pleases, the cock being thrust into the spigot-hole.





*Extract of a Letter from DR. THORNTON,
On a Case of Venereal Affection.*

May 3, 1795.

THE practitioner now and then meets with peculiar habits, in which mercury seems to have no action :— and again, other cases in which mercury is immediately carried off by ptyalism, violent sweats, or excessive diarrhœa. In both these states I was desirous to see the vital air tried, but as yet have been able only to observe its salutary effects in the latter instance.

A wealthy merchant of the city of London, after inebriation, became the victim of indiscreet indulgence. Mercury was had recourse to in the form of pills and unguent, but these produced the greatest derangement in his health, and affected almost instantly the salivary glands. The primary symptoms being however subdued, his surgeon, an able and experienced practitioner, thought fit to leave off the mercury, seeing it was so inimical to his constitution; and for some time the patient believed himself safe; but this Proteus disease broke out in another form, and that unfortunately at the time when he had just married. He was salivated again, but could not retain, according to the opinion of Bell, sufficient mercury to establish a cure; or rather the mercurial action was at first too violent and local to be kept up a sufficient time to produce a permanent benefit. Hence this cruel disorder afflicted him for more than the space of two years. When I saw him, the surface of his body was deformed by dreadful blotches; he had an ulcer on the lungs, attended with a hard cough, and bloody and purulent expectoration; with

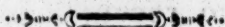
with other horrid marks of this dreadful scourge of illicit desires. Messrs. Wathen and Phipps, seeing this gentleman in so deplorable a state, and having witnessed the relief, arising from the aerial practice, in the case of a servant maid, whom (though not a servant of their family) they humanely lodged in their house, and who was in the last stage of a pulmonary consumption; advised him by all means both to consult me and Mr. Hill.

From my former residence at the Hotwells, near Bristol, and from frequent conversation with the late Dr. Rigg, Physician of that place, I was convinced of the fatality of consumption from venereal ulcers; and though this case was not exactly the one I had chalked out in my mind for the first trial of the vital air, yet, as perhaps it afforded the only chance of recovery, I urged its use. Mr. Hill accordingly gave him each day the super-oxygenated air, in the proportion of two quarts to a thousand cubic inches of atmospheric air; and by way of medicine, he had muriated mercury in the strongest decoction of bark, with the cortex, and two grains of opium at night. He was also occasionally purged. By this course without any violent effect from the mercury, he was in three weeks clear of all discharges of the skin, and in a month the ulcer on the lungs was healed, and the other marks of venereal affection disappeared, and in six weeks he went to Margate, deeming himself perfectly cured.

A question here naturally arises, whether the cure in this case proceeded from a different administration of mercury? or from the combined operation of super-oxygenated air? these doubts must often occur to a private practitioner before the acquisition of more facts.

I cannot

I cannot conclude this letter without congratulating you on the discovery that the kali sulphuratum stops the action of mercury on the system, in a few hours arresting salivation.



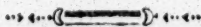
*Extract of a Letter from DR. THORNTON,
On a White Swelling.*

July 5, 1795.

CAPTAIN ——— of the Devonshire Militia, was under the care of several surgeons, for a white swelling of the knee, which, as is usual, increased, notwithstanding the means employed. Mr. Bastard, Member for that county, advised him to place himself under Mr. Hill. After having inhaled the super-oxygenated air but a fortnight, and taken a mixture of bark, myrrh, and columbo, his health was restored and invigorated; the swelling had gradually decreased; he could move his limbs without pain or lameness; and in three weeks he was perfectly cured.

Ever your's,

R. I. THORNTON.



*Extract of a Letter from DR. THORNTON,
On a Case of Cancer attended with Dyspnœa.*

BEING requested to attend with Mr. Hill in a case of cancer by my friend Mr. Wathen, I had the pleasure to hear the latter gentleman daily pronounce, that from the inhalation of the super-oxygenated air, the open wound had put on a more favourable appearance,
and

and the discharge was more kindly. The health of this Lady was also much mended, and what is remarkable, and can only be ascribed to the effect of the super-oxygenated air, and the most benign of all tonic powers, Hope, though for the last fifteen years, she had been obliged to have recourse to opening pills, her body now had its regular exoneration, without the aid of medicine. But the knotty tumours about the head and neck seemed rapidly to hasten in their progress towards an ulcerous state, and the vital air was in consequence desisted from, and the patient left, alas! to languish in a disease, that, till of late, admitted of neither palliative or cure.

The cancerous case, the object of the present letter, occurred not long after : it was complicated with another malady, hitherto deemed incurable, and one almost equally afflicting. The cancer in this Lady was very large, and the whole of the left breast projected, and purged in. It was exceedingly painful, and attended with violent dyspnœa; she could obtain little or no sleep, and therefore scarce any respite from misery. —From my experience, as related above, I doubt whether I should have advised the vital air, had not Dr. Ewart candidly communicated the result of his trials with fixed air in open cancer, and had I not myself seen a man whose finger was taken off by Mr. Hill, receive immediate relief from pain by plunging his hand in that species of gas. This case will be more clearly understood by the perusal of the enclosed letter, which I received from her son three weeks after Mrs. Barker had inhaled the super-oxygenated air, which was administered in the proportion of two quarts of vital air, to fifteen hundred cubic inches of common air.

Silver

Silver Hall, Isleworth, Jan. 12, 1795.

DEAR SIR,

I SHOULD be very much wanting in gratitude, did I not express to you the very great obligation I feel myself under for the benefit my mother has received during the short time she has been under the care of the surgeon, whom you recommended. Some months previous to her attendance on Mr. Hill, she had had the advice of one of the first physicians in town, but so far from receiving benefit from his prescriptions, they seemed to aggravate her complaint. You may therefore guess my satisfaction on observing the very great alteration produced for the better, by means of the vital air. Before, she was in violent and almost continual pain; so much so, that she could have no rest at night; all that pain is entirely removed, and she now sleeps as sound as ever. Before, her stomach loathed the most innocent food; now she eats indifferently of any thing, and that with pleasure and satisfaction to herself. Her great difficulty in breathing, which more peculiarly oppressed her at night is wholly removed, for she now breathes with the utmost ease and freedom. Indeed the alteration is truly extraordinary, and when it is considered, that this change has been effected in less than three weeks, and during weather unusually severe, also on a person approaching 70 years of age, whose health had been long on the decline, it must be looked upon as the more wonderful. I make not the least doubt, but that so powerful an agent, as the vital air, will be productive of the greatest good to her, as well as many others. With the sincerest acknowledgments for the benefit she has already received and many sincere wishes of future success,

I have the honour to be, Dear Sir,

Your very obliged humble Servant,
GEORGE BARKER.

The result of this case I shall hope to communicate with other trials in cancer very soon.

Ever your's,

R. I. THORNTON.

To Dr. Beddoes.

Observation.

This Lady was ordered the decoction of bark, but having a great aversion to medicine, she did not take it regularly, and little, I think, can be ascribed to this remedy, at least no effect equal to that described in the letter.

Extract

*Extract of a Letter from MRS. BARRETT.**July 12, Queen-Square, Westminster.*

SIR,

MY asthma had afflicted me three years. It attacked me very violently at times, the fit going off generally with expectoration, leaving me very low and weak.—The last winter it was uncommonly severe, and, latterly, for months, I had not known what it was to enjoy a comfortable night's rest. As a tradesman in our neighbourhood had been just cured by medicated air of an asthma of thirteen years standing, I resolved to put myself under Dr. Thornton's care, though before this, I had made up my mind to try no more medicines.—I inhaled the vital air from a large bell glass, and its effect was so immediate, that on the second night I slept the whole night through. My attacks were now less frequent, and milder, and pursuing the vital air for six weeks, I got free of my complaint. With the blessing of God, I have continued since in perfect health, except I catch a bad cold, when my asthma recurs, but in a very slight degree.

I am, Sir,

Your obedient humble Servant,

ELIZ. BARRETT.

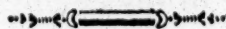
To Dr. Beddoes.

Observations on this Case, by DR. THORNTON.

1. THIS case bears a great resemblance to the case of the Rev. Dr. —, which is recorded by Mr. Townsend, in his Guide to Health, and the indications being the same, the same plan of cure was pursued. The air this Lady inhaled, was two quarts of vital air to 1500 pints of common air.

2. It was remarkable at first, how long a time she took to consume this quantity of air. As her complexion, which was at first livid, began to clear, I remarked, she consumed the air much faster.

3. The tradesman, whom Mrs. Barrett mentions in her letter, is a baker. He certainly obtained considerable benefit, and when I sent on the 20th of July, 1795, to inquire how he continued, the answer returned was, “ that he had not enjoyed such health, as at present, for years.”

*A Letter from the Rev. JOS. TOWNSEND.*

Pewsey, July 21, 1795.

DEAR SIR,

WHEN I was in town, Dec. 15, I called on Mr. Hill, and finding him engaged with patients, I went into the parlour, where I met with Mr. Atwood. We soon entered into conversation, when he communicated his apprehensions of losing his leg, and asked me if I believed that the vital air could effect any thing in such a case. Finding this Gentleman desirous of having
my

my opinion, I explained to him, that though spirituous and other stimulating applications might call forth for a time, the action of a part, in which the vital energy was much diminished; yet, as exhausting it without producing action sufficient for a cure, a proportionable debility and tendency to gangrene must ensue.

This, Sir, said he, is exactly my case. After every application, exciting pain, black parts have constantly appeared, which were either taken away by the knife, or else sloughed off.

It is so, said I, with *spontaneous* mortification: it is preceded, in weak habits, by inflammation accompanied by a proportionate loss of power. But when the air is rendered by the chemist more replete with that substance, which is essential to vitality and is inhaled by the lungs, this alters the disposition of the system, and produces what has been called the phlogistic diathesis, whereby the exhalent arteries pour forth instead of serum, coagulable lymph; the absorbents carry away diseased parts; and the lymph being rendered more tenacious, is converted into granulations. In the new mode of treatment with vital air, energetic action in the part is supported by the system: in the old practice it is kept up for a short time only, by partial stimuli on weak and diseased vessels. There it is produced with a change of the blood; here it deprives the blood of life: there it produces energy; here it excites irritation: there it aids the efforts of nature, and renders them effectual; here it calls her into action, which she is unable to support.

This

This reasoning seemed to have weight with him, and here our conversation was interrupted by a message from Mr. Hill, that he was ready to attend his patient. However I begged permission of Mr. Atwood to see his wounds, which emitted a very offensive fœtor, and had discoloured his stocking. But no sooner were the applications taken off than the fœtor became intolerable, and the sight so disgusting, that I was constrained to hasten into the open air.

On my return to London, Jan. 15, I was impatient to know what had been the issue, and gave Mr. Atwood the meeting as before at Mr. Hill's. The lesser of the wounds was healed, and bore the friction of a brush. The larger wound, so well described by Mr. Corp, was filled and covered with skin, excepting one place the size of my nail, which he told me was occasioned by some accident.

I was equally pleased this day with having a sight of Patterfon, whose case I had heard related at Wathen and Phipps's in Pall Mall, and have since seen described by Dr. Thornton. His leg, now healed, shewed what had been the extent of his former ulcer; his face was clear, and when I put a little bit of paper on the ground, he saw well enough to go and pick it up. As I examined his eye, I discovered still some degree of opacity in the crystalline lens.

To demonstrate, that the inspiration of vital air increases heat, I shall trouble you with one fact, from a case of melancholia, communicated to me by Dr. Thornton, for the second volume of my Guide to Health.

Mr.

Mr. Windy, from being hypochondriacal, became perfectly insane. He was gloomy, fullen, and silent, or muttered only expressions, which evinced what were the terrors of his disturbed imagination. He had no recollection of his wife or children, and the only notice he took of his attendants, was to manifest suspicion that they meant to injure him. He made several attempts to destroy himself. He was costive, and had remarkable coldness of the extremities.

As Dr. Thornton had succeeded so well with the vital air, in the case of Mr. Ruffel, described in the first volume of my *Guide to Health*, printed for Johnson, in St. Paul's Church-yard, and Robinson, Paternoster-row, he determined to give it a fair trial in the present instance. He began therefore with giving four quarts of vital air to ten quarts of common air, which produced no change.—He then gave ether and brandy, hoping thereby to increase the vital heat, but without the least effect, for his hands continued cold as clay.—Thus disappointed in his first efforts to relieve his patient, he gave an emetic in the evening, which brought up a vast quantity of viscid mucus. At bedtime he ordered a calomel pill, which was worked off in the morning with rhubarb and sal polychrest. Having thus cleansed the alimentary canal, he gave the day following ether and brandy as before, and caused his patient to inhale the same quantity of vital air, which instantly produced a genial warmth extending to his fingers ends. Nor was this a transitory effect, for it continued all the time he was under the care of Dr. Thornton.

For

For the sequel of this case I shall refer you to the second volume of my work, which I shall before Christmas have the pleasure to present to you, and in which for the benefit of students I shall illustrate and explain this wonderful phenomenon.

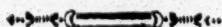
I am authorized to say, that Mr. Atwood inhaled upon an average each day, two quarts of vital air, to 400 quarts of atmospheric air, and that Patterson inhaled two quarts of vital air to sixty of atmospheric.

I am, dear Sir,

Your Friend and Servant,

JOSEPH TOWNSEND.

To Dr. Beddoes.



Letter from Mr. DANBY, to Dr. BEDDOES.

Upper John-street, July 19, 1795.

SIR,

I HAD the honour of receiving your letter, in which you request my case, and an account of the effects that the vital air had on me. I have accordingly drawn up the narrative which I enclose.

I went the latter end of July, 1794, in tolerable health to ———. Not designing to stay there long, I took up my abode at an inn in the town. As was my custom at these places, I ordered port wine after dinner and supper; I observed the wine had a peculiar sweet and soft flavour, which was very unusual and agreeable

agreeable, but I by no means drank of it to excess.— On the third day after my arrival I was seized with tremors, and having taken up a pen to write out some music, to my great alarm, I found I could not accomplish it. The friend who was with me, complained at the same time of a most violent bowel complaint, with great griping and copious evacuations. I was soon after seized with spasms, and lost the use of both hands and feet. I proceeded on to Lymington, and having consulted a physician there, was ordered bark and sea bathing. I went then to the Isle of Wight, and attempted to bathe once, and immediately perceived a great increase of my disease. I therefore hastened back to town, and as soon as Dr. Rowley heard that I was in a most deplorable state, with that humanity so conspicuous in his disposition and character, he voluntarily came to offer me his services, and with the greatest kindness visited me both in town and country. But notwithstanding those remedies, which I have not the smallest doubt were the most promising of the pharmacopœia, yet my disorder kept on advancing, and as I had been taking drugs for five months without benefit, I grew very anxious to make trial of the vital air, which had been of the greatest service to some of my friends. But I did not choose to enter into any new scheme, without first consulting my friend Dr. Rowley, who so far from objecting to it, wished me by all means to make trial of the vital air. I waited therefore upon Dr. Thornton. It was the beginning of December. My hands were pendulous, so that I was obliged to be fed, dressed, and undressed, like a child; being quite helpless, having no use of my limbs, I was also obliged to be carried from place to place; my
countenance

countenance, as well as I can express it, was of a black yellow; my appetite gone; and my nights truly dreadful. Counting the hours as they passed, I repeatedly prayed for morning, which was no sooner come, than I hurried from my place, as I called it, of torment. You will scarce credit the assertion. A week had not passed from the time of my first inhaling the vital air, before my appetite returned, and my nights were rendered so comfortable and refreshing, that my wife could scarce get me up at a reasonable hour in the morning—bed was become such an indulgence! my spirits, as you might expect, were very great; my appetite the same; and my family observed that my countenance was considerably mended. Before the month was out, the motion of my hands was so far restored, that I could compose catches and glees, and in six weeks I began to employ my crutches. My general health is at the present time fully established, and Dr. Rowley says, “I ail nothing now but weakness, the consequence of previous indisposition.”

I have the honour to be, Sir,

With the highest respect,

Your obedient humble Servant,

JOHN DANBY.

Observations

Observations on this Case, by Dr. THORNTON.

1. DID not this paralysis arise from the poison of sugar of lead? An acquaintance of Mr. Danby, who went *since* to the same inn, was seized with similar symptoms. Several medical men, who had no knowledge of the story, have asked him, "whether his physicians did not think he had been poisoned by lead?"

2. If this was truly the case, what would be the probable effect of sea-bathing? Dr. Johnson, a young physician of rising reputation, when at Cambridge, took a dog and poisoned him with sugar of lead; he was affected with paralysis. He opened the window and door, and admitted a current of cold air, when the paralysis became *more violent*, and the animal soon expired.

3. Dr. Rowley had tried tonic medicines, as bark, steel, and bitters, in various forms; and afterwards mercury as an alterative, with the intention, as I suppose, of giving irritability to the system. What might have been the effect of a conjunction of the two means?

4. Or was it necessary to oxygenate by the lungs, the organ supposed by some solely appropriated in cold climates to that purpose? (vide Medical Extracts, page 106). I have some grounds for suspecting this, for I left off the super-oxygenated air, and gave in the room of it, nitre and acids, but it produced so great a derangement in Mr. D.'s constitution, that it was obliged to be desisted from, and I must observe, that the mercury by itself, though indicated, seemed to aggravate the disease.

F

5. This

5. This case affords a very striking instance of the different effects of modified air of different degrees.— When Mr. Danby inhaled as a dose, two quarts of modified air to 800 pints of atmospheric air, he generally afterwards experienced a comfortable glow, which extended, as he himself used to express it, to his fingers' ends. But when I attempted three different times to augment the dose to three quarts of vital air to sixty pints of atmospheric air, he was, after inhaling it, seized each time with excruciating and wandering pains, and passed a feverish night, and I was obliged to return to the former dose, and I must observe he always saw me prepare the mixture of airs, from the beginning to the end of his attendance on me. The medicines I prescribed were bark with other tonic powers; and costiveness was obviated by those cathartics in which the acid or oxygenous principle predominates.



Extract of a Letter from Mr. WATT, Engineer, to

Dr. THORNTON.

Heathfield, Birmingham, July 13, 1795.

DEAR SIR,

I AGREE perfectly with you, that the artificial air should be given much diluted with common air, and whether that has been yet carried *far enough* does not appear certain to me. I was convinced of the advantage of dilution from experiment, as well as from reasoning a priori; for if a man breathes any mixture containing much oxygene, he will expire the air highly oxygenated, therefore the oxygene has not been absorbed, and could only act by its immediate stimulus,
and

and not by affecting the blood materially, whereas had the same quantity of oxygene been diluted with more common air, it would have been longer in being breathed, and would have had more time to act upon the lungs and be absorbed. The same is the case with hydro-carbonate, if taken little diluted, the greatest part is expired without having had any action, but by dilution time is given, and there is a continued action upon the blood, which though less violent in its immediate effects, lasts longer and seems more friendly. All this leads to the conclusion, that when these airs are breathed, the patient should retain them in his lungs a longer time than usual; and it is probable also, that by deep inspirations many of the small vesicles of the lungs may become distended, which do not commonly expand, and may retain the facitious airs for absorption; hence the frequent return of vertigo after inhaling the hydro-carbonate by forced inspirations.—Your experiments seem to confirm, what I have been saying.

You will see from all this, that I highly approve of your mode of proceeding, by considerable dilution of the airs: and by fair and minute representations of symptoms, doses, and facts, to which if it were convenient to add your observations on the circumstances of the preparations of the air, it would still further the science.

Heartily wishing every success to your endeavours for the benefit of mankind,

I remain respectfully, &c.

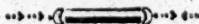
JAMES WATT.

Observations

Observation by Dr. THORNTON.

IS not this reasoning considerably in favour of a Pneumatic Institution, in which the vital, hydro-carbonate, hydrogen, fixed, and other airs, will undergo a very great dilution, and be longer inspired ? this remark will be strengthened when I come to a case of pleurisy, in which I made experience of the effects of a reduced atmosphere.

In a letter dated July 23d, 1795, Dr. Thornton observes, “ that the lungs of a frog are really two bags :
 “ therefore little oxygen is absorbed. The more
 “ lungs are honey-combed or divided into partitions,
 “ the larger surface do they afford, for the absorption
 “ of oxygen. In broken-winded horses, as I know
 “ from dissection, five or six cells run into one. The
 “ lungs in this instance bear a greater resemblance to
 “ those of the turtle, than in horses not broken
 “ winded.”



Letter from Mr. WATT.

Birmingham, June 24, 1795.

DEAR SIR,

I AM glad to hear that you propose soon to publish an appendix or supplement to the second edition of your CONSIDERATIONS. If you approve of the following cautions, as I think you will, I beg that you will insert them, although they are mostly a repetition of what has been already printed, but too little attended to by some users of the pneumatic apparatus.

1. OXYGENE

1. OXYGENE AIR is subject to be debased with fixed air, if any inflammable matter be mixed with the manganese from which it is procured, (which may frequently happen by accident), or when it is prepared in a new fire-tube, or one in which hydro-carbonate has been prepared; in all these cases, the quantity of oxygene air produced, will be much less than would otherwise be yielded by the same quantity of manganese.— This species of air when fresh made, also contains a large quantity of manganese in a state of suspension, which it deposits upon being kept some hours at rest.

It has been found by several patients, that the fresh-made air containing the suspended manganese occasions a disagreeable sickness, and that which contains much fixed air, occasions sickness and pains in the breast, which do not entirely subside for some days, though they do not seem to be of a malignant nature.

I suspect therefore that some unpleasant effects which have been imputed to oxygene air, may have been owing to one or both of these causes; and therefore recommend, that in preparing this air, there should always be some caustic lime well mixed in the water of the refrigeratory, and kept suspended by a gentle motion of the agitator, and that when the air is procured it should be well shaken with some quick lime and water in the air holder, in which it should be kept twelve hours before it is used, shaking it well from time to time. To these add the precaution of appropriating a fire-tube solely to the preparation of oxygene, and it will be attained free from any noxious admixture.

HYDRO-

HYDRO-CARBONATE AIR is also subject to an admixture of fixed air, which from the relations of intelligent practitioners, seems to diminish its efficacy, and may not in many cases be proper to be administered where hydro-carbonate is useful. I am assured by Mr. Barr, that to procure this air (hydro-carbonate) of a good quality, the water should be admitted so slowly, that it may require twenty minutes to procure one full of the large bellows, and that when longer time was employed, in consequence of a slower admission of water, the air was still more efficacious.

I recommend the same precautions of mixing lime in the water of the refrigeratory, and of shaking the hydro-carbonate with lime and water in the air-holder, as for the oxygen; but I am not enabled to decide whether it is necessary to keep the air till it deposits its charcoal, some Gentlemen think that on the contrary, it is best to use it when fresh made.

The great powers of the hydro-carbonate air require the dose to be measured with the utmost accuracy, I therefore recommend that it be always measured out of the air-holder, by pouring in the measure of water as directed, and never measured by means of the hydraulic bellows, which is not so exact a method, especially when the diameter is large.

The charcoal from which this air is prepared, should always be previously well calcined, as empyreumatic vapours from half burnt wood, appear to be very deleterious; perhaps *they* may have their virtues, but it is desirable to know exactly what is administered, and the virtues of such airs may be very different from those of the hydro-carbonate.

J. W.

To Dr. Beddoes.

Caution

Caution from Mr. WATT.

THE utmost care should be taken that no bits of coals, charcoal, wood, or other inflammable matter be mixed with the manganese in preparing oxygene air, and that none of the linseed oil or the fat lute penetrate into the fire-tube: when any of these substances are mixed with the manganese, fixed air is produced, of an extremely pungent quality, and which it is apprehended will prove extremely detrimental in the generality of the cases in which oxygene air would be directed.

Imperfectly burnt charcoal, or mixtures of oily substances with it, are hurtful in preparing hydro-carbonate; therefore it is hoped that the cautions given on that subject, as well as upon the preparing it free from fixed air will be attended to, and these repetitions excused. A patient who prepared oxygene air for himself, found it one day so pungent as to occasion a sense of burning in his lungs. The manganese was inspected and a sample sent me. On examination I found it to contain nothing but manganese and iron as usual.—There were no heterogeneous mixtures in the hoghead out of which it was taken. Some mixture of inflammable matter I therefore conceive must have happened; and I know the fixed air so produced is too pungent to be smelled to.

J. W.

Extract

*Extract of a Letter from DR. THORNTON,
On Catarrh.*

March 23, 1795.

I AM sorry that the one I enclose is a solitary case, but trials of this sort may be easily multiplied, I can see no harm in publishing new trials provided these be accurate, and the trial is attended with so little prospect of danger to the patient as in the present instance.



March 21, 1795, Hollywell-street, Strand.

SIR,

AS DR. THORNTON has requested me to relate to you my case, and as the communication may be of service to others, I will give it as well as I am able, hoping for the indulgence of the critical reader, from the consideration of the motive that has induced me to make it public. On the 18th of this month, I was for some time in a large room, which was much crowded and very warm. When I came out of this place, I perceived the wind to be very cold. It was easterly and I had to face it as I returned home. Upon getting into bed I took some brandy and water, and soon after felt myself uncomfortable and restless. On the next morning when I awoke I coughed frequently, and threw up a thin transparent mucus, which came up freely and with no pain. I was convinced I had caught a bad cold, for my colds are uncommonly severe, and these are the constant symptoms of their having seized me. The next morning after breakfast, my breast was very sore, and my cough very troublesome and painful.

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The mucus became glutinous and somewhat difficult to discharge. After I had dined, and drank three glasses of wine, the oppression and pain increased in severity. Believing now I had an inflammation of the lungs from the pungency of the pain, I hastened to see Dr. Thornton, who made me inhale the vapour of æther. I received from it almost immediate relief, both with respect to the oppression as well as the pain in my breast. Nevertheless I continued much affected all the evening, and coughed a great deal, and when I expectorated I felt a soreness at my breast. Before I went to rest I put my feet in warm water above half an hour, and took some warm gruel in bed. All this I have often done before, when so attacked, but seldom found much relief from it. I had recourse again, as directed, to the vapour of æther, and inhaled two teaspoonfuls, which again gave me the same immediate relief as before. I very soon after fell asleep, had a good night's rest, and when I awoke in the morning, instead of difficulty of breathing, a long fit of coughing, my breath hot, my tongue dry and parched, as had been invariably the case after such symptoms as above described, I breathed, on the contrary, freely, coughed only once or twice, and proceeded throughout the day in my business, without the smallest inconvenience.

I am, Sir,

Your obedient humble Servant,

THO. WINNE TOWNSEND.

To Dr. Beddoes.

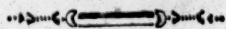
Observations on this Case by DR. THORNTON.

1. THE manner of inhalation is very simple. Two tea-spoonfuls of æther are put into a tea pot. This is held near a candle, and the thumb is put over the spout. When the vapour begins to press upon the thumb, it is transferred to the mouth, and the air is drawn into the lungs. This is to be repeated until the whole be consumed, or ease acquired.

2. That the vapour of æther is inflammable air we have the following proof.—I had often put æther into phials containing oxygen air, with a view to produce an explosion, but it never exhibited any other phenomenon than a blue lambent flame. One day having washed out a phial that contained æther, I transferred into it the vital air, and by way of shewing the properties of this gas, having blown out a lighted match, I conveyed the burnt end into the phial of oxygen air, but unexpectedly, instead of the match rekindling, a most violent explosion took place. I then put two drops of æther into a stronger phial containing this air, and having warmed it with my hand, upon transferring the red-hot part of a match into the oxygen gas, it produced an explosion nearly as loud as a gun: the match is shivered, caloric is disengaged, water is formed, and the remaining air, after this process, is incapable of supporting combustion. As the phial in this instance did not burst, I have frequently repeated the experiment, and have always found that one drop of æther to an ounce measure of vital air, will produce the same phenomena.

3. In a defluxion of the nose, may not the morbid secretion be thickened, by stopping the mouth, and
drawing

drawing up an atmosphere chiefly composed of fixed air ? Chemistry, I believe, points out this as very probable ; but such conjectures will be at once determined by a proper public establishment.



Letter from Dr. THORNTON.

July 27, 1795, Great Russel-street.

DEAR SIR,

IN your letter to Dr. Darwin, dated June 20, 1793, having stated the reasons that inclined you to think, " that in a certain class of consumptive patients, there " may be a super-oxygenation of the system ;" you subjoin, " that in constitutions injured by opium or " excess of spirituous liquors, (and more especially " while they are under the operation of such liquors " or drugs) there probably exists a deficiency of oxy- " gene." The manner in which you attempt to prove these positions struck me much, and the following facts will, I think, tend in some measure to support the latter opinion.

Miss F—— came purposely from Edinburgh, attended by her mother, to be under the care of Messrs. Wathen and Phipps. Labouring under a dreadful ophthalmia, she had been excluded for the last six months from the cheerful stimulus of light. Living in a confined situation in London, and unable to use exercise abroad, she had been constantly breathing a corrupt air. Seeing her worn down by pain ; nearly deserted by hope ; deprived of sleep, though she took large doses of opium ; tormented with head-ache in
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the morning ; and without the least appetite during the day, Messrs. Wathen and Phipps did not think she would survive many days. Being called in by these Gentlemen I beheld the image of patience and wretchedness. The Lady's countenance and lips were pallid in the extreme. Her pulse was almost too weak to be discovered. I before observed that Miss F—— was in the habit of taking laudanum every evening, the quantity was 110 drops, from which she latterly obtained but little sleep. After inhaling the super-oxygenated air her pulse evidently increased in fulness ; her spirits were roused ; her appetite in some measure returned ; and a less quantity of laudanum would produce the desired effect.

I am, &c.

R. I. THORNTON.

To Dr. Beddoes.

*Observations on this Case, made by Dr. THORNTON,
and Messrs. WATHEN and PHIPPS.*

1. FROM local fulness we judged it prudent to take blood from the eyes of Miss F——. Her blood at first hardly coloured a white handkerchief ; soon after she had inhaled the super-oxygenated air, it slightly tinged it ; and in a fortnight the blood became of its right florid hue.

WATHEN and PHIPPS.

2. The dose of air given was from two to four pints of vital air, and less diluted than with most other patients. This was very speedily consumed.

3. Why the vital air is favourable to sleep would deserve to be explained. Nurses, who are actuated by

no principle but observation, when they want to get an infant to sleep, carry it into the *open air*; for the same purpose they sing to it, or dance it about. Now are not these powerful stimuli exhausting irritability, which predisposes to sleep? The partial abstraction of the stimulus of vital air also produces the same effect, and more immediately, which was an improvement in medicine, first suggested by you, and will, probably, in cases where stimuli are to be feared, supersede the use of opium: in the mean time it may not be disadvantageous to know how to obviate the after-evil of this prevailing medicine.

R. I. THORNTON.



Letter from MAJOR BRAITHWAITE.

Stratton-street, July 24, 1795.

SIR,

AS I had for a considerable time been troubled with rheumatic pains, it was recommended to me to take a mild opiate every night on going to bed, and in the event of that dose not proving sufficiently soporific, I was to add to it a few drops of laudanum; for which purpose I had procured a two ounce phial of laudanum, expecting to take a journey, where it might not be in my power always to procure medicine equally good of the kind. Nevertheless being unwilling to accustom myself to the use of opium, I generally postponed taking the opiate till extreme pain and want of sleep rendered it absolutely necessary. In one of those moments, about four o'clock in the morning, I reached out my hand to the night table, on which by mistake my servant had placed the phial containing the

two

two ounces of laudanum, and believing this to be my usual night-draught, I poured the contents into a tumbler glass and drank it off. I soon perceived my mistake, not only from the taste of the laudanum, but from my immediate relief from pain. From a certain pleasing languor, it was some time before I could rouse myself sufficiently to ring the bell for assistance.—being however perfectly convinced within myself, that I must soon, unless my stomach was eased of the poison, beat a quick march into the other world, I made this effort and ordered some warm water ; it was some time before it could be got ready. As soon as it was brought I drank large quantities, but without any apparent effect. The apothecary was sent for, he gave me several strong emetics before they took any effect, when I brought up a considerable quantity of laudanum. I afterwards had a profound sleep, and very early in the morning inhaled the vital air, which was administered by Dr. Thornton, who ordered me to drink lemonade, which from the weak state of my stomach, was almost as speedily rejected, but *perfectly sweet* to the taste, and so *deprived of all acidity* as left me no doubt of what I cast up being only sugar and water. This was frequently repeated with always the same result. In the evening I eat my dinner without any sensible difference, and felt the next day much as usual. This is the simple fact to the best of my remembrance. If it can be of any use in a science, which has for its object the ease and happiness of mankind, I shall always look back with pleasure to an accident, which has afforded me an opportunity of giving you this detail.

I am, &c.

GEO. CHA. BRAITHWAITE.

To Dr. Beddoes.

Observations

Observations on this Case, by Dr. THORNTON.

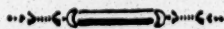
1. AS more than an hour had elapsed before the emetic was administered, the opium though much diluted, must have taken considerable effect, and was not this proved by the quantity of vitriolated zinc necessary to be given, which the apothecary said was sufficient to vomit six strong men ?

2. Major Braithwaite's pulse, which was commonly slow and full, was when I felt it, very quick and fluttering. Upon inhaling the super-oxygenated air, I carefully observed by my stop watch, that it was diminished near 15 beats in a minute; it also acquired fulness.

3. This Gentleman inhaled six pints of vital air, but little diluted with atmospheric air, we were both surprised to see how speedily it was consumed !

4. This inhalation gave great refreshment for the time, as did the lemonade, which was taken into the stomach moderately warm. The idea of lemonade I derived from you.

5. Does not this case render it probable that opium disoxygenates the system ?



Mr. BOOTHBY CLOPTON's *replies to queries respecting his personal experience of the inhalation of vital air.*

HAVING written a letter proposing queries to Mr. Boothby Clopton, I received the following very satisfactory answers.

R. I. T.

July 19.

July 19.

SIR,

AS Sir William Chambers, and other Gentlemen of rank and character in England, have consented to authenticate the effects of the vital and other aerial remedies on themselves, and as my motive for this application is no other than the extension of the most important of the sciences, I am emboldened to request the same favor of you. You, Sir, are so well known to move in the highest sphere of life, that your testimony will greatly contribute to draw attention towards an investigation, which I have no doubt will finally be productive of the greatest general good. Permit me then to request your answer to the following queries.

1. What was the nature of your indisposition ?

Anf. Asthma, accompanied with great debility.

2. How long had you been ill previous to your coming under my care ?

Anf. Seven months.

3. Did the Gentleman, who attended you, make any objection to your trying the vital air, or did he suppose other medicines would have had equal efficacy ?

Anf. Mr. Farquhar had no objection, medicines having been so long used without effect.

4. Was the disease after a time alleviated ?

Anf. Immediately on my inhaling the air ; I was less oppressed with asthma, and slept better the first night than I had done for seven months.

5. Did

5. Did you find any alteration in your strength and spirits ?

Anf. My strength and spirits were certainly increased.

6. Did your friends observe any alteration in your countenance ?

Anf. Not only in my countenance, but in my person, for my nights being rendered good, I increased considerably in weight.

7. Has the advantage been permanent ?

Anf. I inhaled the vital air in the winter, and am now in perfect health, and as I took no medicine, I am convinced my recovery proceeds from inhaling the vital air.



Letter from Mr. COOPER.

Dacre-street, Westminster, July 29, 1795.

SIR,

I WAS above nine months afflicted with hard tumours, which were very slow to suppurate, and when they did, produced only a watery discharge, and a sore, that took a long time in healing. These appeared chiefly about the mouth and throat. Previous to this, I had frequent eruptions on my face, for which I was often purged and bled, which in my opinion might have brought on the disorder I am attempting to describe to you. It soon became necessary to try every means to get rid of it, and I took a vast quantity of different medicines ; but the tumours continued rather to increase in size and number, and produced a conti-

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nual inconvenience to me. As the vital air alters the character of the blood, and I conceived my case arose from a broken state of the blood, I waited on Dr. Thornton, who thinking these tumours very likely to be removed by the air, wished me to make the trial. At that time several of the tumours were commencing, others were upon the point of breaking, and others again were in a state of open sore. My bowels were first cleared, and I inhaled the vital air, and took bark twice a day in powder. The effect the air had on me was as my mother and sister observed, to make me eat more than usual. I felt uncommon spirits, and no longer complained of chilliness. The tumours that were in their first state disappeared; the others looked redder and gave me more pain, and discharged matter. But in a fortnight these also yielded to the air and disappeared, and I was cured. But what surprised me most was the change it produced in my eye sight. My eyes for the space of fifteen years had been uncommonly weak; so weak, that I was never able to read or write by candle light, but from inhaling the vital air, they have acquired such strength, that latterly I have sat up writing in my books, sometimes from twelve to one o'clock, without feeling the sight the least fatigued. My mother used to attribute my weakness of sight, to my having had the measles very bad. I am at the present time perfectly well, and without any fear of my former afflicting disorder.

I am, Sir, with the greatest respect, &c.

HENRY FREDERICK COOPER.

To Dr. Beddoes.

Observations

Observations on this Case, by DR. THORNTON.

1. This cure was established in Nov. 1793, when it was my custom in breaking the balance of the constituent parts of the air, to incline more to the side of the vital air, and the patient inhaled daily 300 pints of common air, super-oxygenated by four quarts of vital air.

2. Scrophulous tumours you have conjectured to arise "from a deficiency of oxygene, occasioning irritability in the system." Was not this indicated by the blueness of Mr. Cooper's countenance; the slowness of his pulse; the torpor of the tumours; and the weakness of his sight, incapable of supporting the stimulus of a strong light, for these disappeared in proportion as his system became oxygenated and the fibres strengthened?

3. Having twice stimulated the several tumours with a solution of the oxyd of mercury, so as to produce some external inflammation, are we not to attribute some part of *their* cure to that process?

R. I. T.

4. It is hardly necessary to point out to the reader, the inference deducible from this important communication with respect to the use of vital air in a well-known species of ophthalmia.

T. B.

*Letter from Mrs. BENHAM.**July 9, 1795. Fore-street.*

SIR,

I have been from my earliest youth terribly distressed with a nervous head-ache and weak digestion. This disorder runs in our family. I had tried almost every thing, but without relief. I must confess, however, that while I inhaled the vital air, it did me good, but the distance was so far to attend, that I was obliged to leave it off, it interfered so much with my business.— It seemed at the time to remove a load from my stomach, my spirits were better, and my appetite mended. It certainly took off a weight from my stomach, but whether the walk overpowered me I cannot say, but my head-ache continued the same. My disorder had affected my sight, that I could not see small print, but after about ten days from my trying the air, having taken up a prayer-book, and turned by accident to where there was small print, I was astonished to find I could read it. Having soon left off the air, perhaps before I had given it a fair trial, my stomach is now as bad as ever, and my sight as before.

I am, Sir,

Your obedient Servant,

ANN BENHAM.

To Dr. Beddoes.

Mrs. Benham regularly attended the first week each day, and for a fortnight after paid occasional visits.

R. I. T.

Letter

Letter from Mrs. BROOMHALL.

July 23, 1795, Stanhope-street.

SIR,

DECEMBER, 1793, when I came under Dr. Thornton's care I had a bad digestion, and a head-ache so intolerable, that I believed, had I not been cured, I must have lost my senses. I inhaled the vital air, and by Dr. Thornton's order, I took an electuary of bark and steel, three times a day, having been first prepared for that medicine. From the first I gradually grew better, acquiring both strength and appetite, and in proportion as these improved, my head-aches were diminished. I attribute my increase of spirits and appetite wholly to the vital air, for a lady in perfect health going one day with me, out of curiosity, to see me inhale the vital air, having desired Dr. Thornton to allow her to take some of it, her spirits were so high, and her appetite so good, that she very much surprised the family she was with on her return home.

I am, Sir,

Your obedient humble Servant,

ELIZ. BROOMHALL.

To Dr. Beddoes.

The disorder here mentioned, had been coming on gradually for three years. She has no returns of dyspepsia or head-ache, and is at the present time in very good health.

R. I. T.

Letter

Letter from Mr. COTTEREL.

July 6, 1795, King-street, Westminster.

SIR,

I WAS troubled with great flatulence, heartburn, want of relish to my food, lowness of spirits, coldness of the hands and feet, and had slept very ill for more than five years. Before this time I enjoyed very good health; and to be employed in my occupation for my wife and family was a delight, but now it was attended with extreme uneasiness to myself. I was under the care of Dr. Lister, Dr. Pitcairne, and other medical Gentlemen of the first eminence. I had taken a great load of bark and other medicines, and during these five years I changed first from one and then to another, and tried what different friends recommended, but in the end I only grew worse. Having spoke to Dr. Thornton, he gave me some hopes, and by his direction I inhaled the vital air, and drank three times a day water impregnated with fixed air, in which I dropt 30 drops of æther three times a day. In a fortnight I was free from my complaint, but I continued for some time the water impregnated with the fixed air, in which some salt of steel had been dissolved, and I have since occasionally chewed a warm aromatic root, and for these last two years have enjoyed very good health.

I am, Sir,

Your obedient Servant,

MATTHEW COTTEREL,

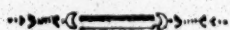
To Dr. Beddoes.

Observations

Observations on these Cases of Dyspepsia, by

Dr. THORNTON.

THAT common air consists of two principles, viz. vital air and azotic air, was first satisfactorily proved by Lavoisier: That the blood fixes within itself one of these principles, viz. the vital air, was perhaps the discovery of Dr. Goodwin. The extinction of this principle, before it enters the veins, thereby generating vital heat in the body, was the discovery of Dr. Crawford, to the perfection of which theory I might have slightly contributed: That there is a balance between the vital air taken into the lungs, and the quantity of food that can be digested by the stomach, was among your earliest discoveries. These cases seem to confirm your views, and unless there were danger of exhausting the patience of your readers, I could direct you to many other persons, from whom you might procure testimony to the same effect.



Note from Mr. RUSSEL, Engraver.

August 1, 1795, Constitution-Row, Grey's-Inn Road.

SIR,

THE Rev. Mr. Townsend's account of my case is perfectly correct and expressive of my situation.—Wherever I went, every one who knew me testified the greatest surprise at seeing me so recovered. Since which time (nearly two years) I have continued in excellent health, having had no return of my former complaint.

I am, Sir, your most obedient humble Servant,

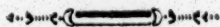
JOHN RUSSEL.

To Dr. Beddoes.

The

The case of Mr. Ruffel, together with some others treated by elastic fluids, is related by the Rev. Joseph Townsend in his *Guide to Health*. It was a case of *melancholia*. Oxygene-air with other remedies were employed. The cure cannot therefore be fairly ascribed to oxygene alone ; but the report shews demonstrably that this remedy had efficacy. For when it was withheld, the symptoms grew worse, and gave way when it was administered afresh.

T. B.



Letter from Dr. THORNTON.

August 6, 1795.

DEAR SIR,

I CANNOT better close my communications than by the trial I have made of vital air in pregnancy. It had often been remarked, that pregnancy arrests consumption, but to you first we are indebted for an attempt to explain the manner in which this effect is produced. Allow me to lay your words before the reader. “ The foetus has its blood oxygenated by
 “ the blood of the mother through the placenta.—
 “ During pregnancy there seems to be no provision
 “ for the reception of an unusual quantity of oxygene.
 “ On the contrary, in consequence of the impeded
 “ action of the diaphragm, less and less should be taken
 “ into the lungs. The dark colour of the blood; the
 “ aching of the teeth, and bleeding of the gums; the
 “ propensity to break out into sores, their dark appearance, and difficulty in healing; the dislike to animal
 “ food; and desire of acids and vegetables; also the
 “ black

“ black appearance of the areolæ of the breasts, peculiar to that period ; and the fallowness of the countenance, seem to indicate a defect of oxygene.” In the present case most of these symptoms were strongly marked ; they were accompanied with great dyspepsia and lowness of spirits. As with those under the influence of wine (the theory of which we before had occasion to consider), there was defect of appetite in the morning, with nausea and frequent inclination to vomiting. Instead of arterial, (for the Lady was in the vigour of life) there was venous plethora, and she complained of universal chilliness. I observed that acid fruits and vinegar were so much indulged in, as in another state of the frame must have produced great evil. This indulgence was not however previous, but subsequent to the symptoms above described, and so far from augmenting seemed greatly to lessen them.—Any smell tending to putrescency would occasion a total derangement in her constitution. Salt of vinegar and acids were very reviving, and would almost instantly stay the inclination to vomiting. In this state a violent fright produced first fainting, and then convulsive fits ; these alternations would afterwards appear at uncertain intervals, and last from two to three hours. Wine, laudanum, peppermint, and brandy, seemed the most salutary remedies, either by being a stimulus adapted to the torpor of the system at that period ; or else from the consent which this occasions with the lungs, whereby a larger portion of vital air is imbibed by the blood flowing through that organ. As things were thus circumstanced, I thought of the vital air, and reason authorised me to make this delicate and interesting trial. Therefore during one of these paroxysms,

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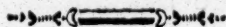
pepper-mint,

peppermint-water and wine being first administered, and the room sprinkled with vinegar, I pressed into the lungs super-oxygenated air, and in a few minutes there was a most evident alteration for the better. This Lady being recovered, the super-oxygenated air was inhaled afterwards for several days, and it seemed to bring back the frame to the natural state of health, but I chose not to persist in the use of an unknown power, unless urged by the strongest indications.

I am, &c.

R. I. THORNTON.

To Dr. Beddoes.



*Letter from Dr. THORNTON, respecting patients with
impaired organs of sense.*

DEAR SIR,

FROM the very quick restoration to sight of the blind boy, whose case I have before related, where there was water oppressing the brain, and from the case of Patterson, it was generally rumoured abroad, that *gutta serena* yields to the powers of the vital air.—This report gained the more credit, as a lad, who had been deaf—so deaf, that he did not even hear the Tower guns, though placed under them when they were firing, and whose mouth was drawn awry—by inhaling the vital air had entirely recovered the right position of his mouth, and could distinguish loud sounds, as the Rev. Mr. Townsend and many others witnessed. It was pleasing to observe, how delighted he was at the exercise of this returning faculty, for not a carriage

riage could pass, nor a rap even at a neighbour's door, nor any loud noise, but he joyfully noticed it; on the first day of his hearing, his father said, his extasy was beyond expression. He had likewise lost the power of speech, and therefore conveyed his meaning chiefly by gesture. The resemblance which this case was supposed to bear to paralysis of the optic nerve, made this idea general, even in the medical world. With regard to a partial paralysis, we have in reality, one case somewhat in point.

A Lady of rank was recommended to me and Mr. Hill; she had entirely lost one eye, and the sight of the other was so impaired, that she could not read writing at all, nor any but the largest print; and streams of light seemed to issue from the fire and the candles in the evening. There was no apparent defect in either of the eyes to any common observer, nor would any one in a room or carriage have imagined her sight failed her in the least. As the criterion to judge by, I requested this Lady, as she passed by in her carriage, to try if she could distinguish the hour at the Horse-Guard's clock, she found she could not. She inhaled the vital air at first for a few days, and by the direction of Messrs. Wathen and Phipps, electricity was daily employed, and the vapour of æther was thrown with the electric aura on the eye. She took once a day a tonic mixture, and before six weeks were elapsed, this Lady was able readily to distinguish the hours on that same clock which had before presented only a confused object.

A Merchant came purposely from Jamaica, to be under Dr. Baillie, who with that liberality and love
for

for the improvement of medical science, so conspicuous in the family of the Hunters, recommended him to Mr. Hill. I was in hopes I should have been able to have furnished you with this case, and had long ago promised it; but from caprice so common among the sick, without the least shadow of ground, he desisted from the vital air, and gave up probably the only chance of recovery. A poor man labouring under total darkness from gutta serena, was humanely sent last winter to Mr. Hill, by Messrs. Wathen and Phipps. His general health was established by the inhalation of super-oxygenated air. The pupils, I thought, seemed rather to contract upon the application of a strong light, but the man living at a distance, and the winter being very severe, he did not attend much above a month.

With respect to super-oxygenated air in true amaurosis no conclusion in my mind can be drawn from the case related by Dr. Carmichael; for the vital air was had recourse to as a powerful exciting remedy; bleeding was on the same days employed, and a sudden transition was made to an air diametrically opposite in its virtues. This accurate Physician pursued a very different mode in chlorosis with good effect at first, and I trust, final success. Upon the whole, "whether benefit will result from the vital air in true gutta serena" remains to be decided.

Ever your's,

R. I. THORNTON.

Letter

Letter from Dr. THORNTON, on Yeast.

DEAR SIR,

THE communication of the Rev. Mr. Cartwright, on the efficacy of yeast in putrid fevers, induced me to pay much attention to this remedy. It appeared to me an excellent substitute for the effervescing mixture, which extricates too little fixed air to produce any very important action in the constitution. As fixed air forms the chief ingredient in medicinal waters, it has been without much opposition introduced into the practice of medicine. Its great antiseptic powers have been fully ascertained. But in the present instance I am about to consider it also in another point of view. From the experiments of Dr. Percival, it appears, that fixed air is absorbed by the lacteals, and is secreted from the blood by the kidneys, so as to affect the water in the bladder; hence it becomes a solvent for the stone. From those of Mr. Abernethy, it appears, that it is also absorbed by the skin, and you conjecture, "that the constitution might be saturated by the immersion of the naked body or limbs in vessels containing airs." These suggestions led me to a new mode of treating peripneumony. But it may be proper first to premise one or two trials of yeast in putrid fever.

Mr. Caldwell, some months back requested me to go into Green-street, Leicester-fields, to attend Mr. Hadril, who he said, it was supposed, would not outlive the day. I found him labouring under a dreadful sore throat: the tongue was black and thick coated, and the pulse quick and fluttering. Evacuations being first employed,

employed, yeast and bark in porter were exhibited every two hours. His sister, who nursed him, was soon after attacked by the same fever, but the throat was not affected. She was not like her brother confined to her bed, but her weakness was so great that she could not walk across the room, nor even stand up half a minute without support. In both these cases the relief from the yeast was very striking, and they were soon cured.

Mrs. Knight of Bolt-court, Fleet-street, had a white tongue ; prostration of strength ; the eyes glossy ; the countenance vacant, with a heaving cough ; great heat on the surface ; pulse 120 ; complexion very florid. Having first given an emetic and cathartic, and well cleared the *primæ viæ*, I ordered three table spoonfuls of yeast to be taken every two hours. After the second repetition of this remedy, it brought on a great sense of coldness ; the stomach was inflated with wind ; she eructated continually ; and for two hours was threatened with hysteria. As the loss of the fever produced great faintness, her officious and alarmed friends, gave her their grand specific for wind and lowness, Geneva and water. Finding on the next the day fever returned, and a prejudice against the yeast, I treated it according to the ordinary practice ; the inflammatory stage passed into the putrid, with twitching of the tendons, and other symptoms exciting alarm, and notwithstanding bark and wine it run its course of one and twenty days.

Master Kennard, who lives with Mr. Stoner, Charles-street, was brought to me by his mother for my advice. He was also in the inflammatory stage of a putrid fever.

I ordered

I ordered an emetic of antimony, and after this operation cleared the intestinal canal with rhubarb and vitriolated kali; the fever, though greatly abated, still continuing, I recommended yeast, and the lad was in a few days perfectly recovered.

Having in the two last cases ascertained, that the sthenic pulse was sunk by the operation of the fixed air, extricated in the warm stomach from the yeast, I conceived, that in violent inflammation it might sometimes preclude the free use of the lancet, and a case happily occurred, at the close of last winter, which seemed to authorize the trial.

Mr. Kennedy, a hair-dresser by trade, living in Tottenham-Court-Road, aged 35, of so nervous a frame that he could not shave his customers, (his hand being subject to tremble) was attacked with the prevailing inflammatory disease of the last spring, which took off such a number of persons. He was seized with rigor and head-ache, succeeded by acute pains in the chest; his breathing became laborious, and towards night he had violent delirium. I was sent for early in the morning, and I observed 1st. a tense and oppressed pulse; 2d. great heat; 3d. great difficulty of breathing; 4th. he complained of acute pain in the right side; and 5th. had total loss of sleep. I instantly called to mind Brown's ideas on catarrh. After a severe frost, with snow on the ground, the weather became mild, and the *accumulated irritability* was by the heat called into action.—Had blood been taken from the arm, the blood partaking of the same *increased irritability* would have contracted strongly, and we should have had that cupped appearance, and hard coagulum so expressive of inflammation.

From

From this theory the art of cure seemed to be to adjust the stimuli to the tone of the irritable fibre, and as the ordinary stimuli produced inordinate action, from the increased irritability of the fibre, it became necessary to reduce these as early as possible. I was convinced, from former experience, that the oppressed pulse would have risen under the finger, as the stimulus of the blood was withdrawn; but as this fluid is with difficulty regenerated in habits like that of my patient, and in *this* epidemic bleeding had precluded quick recovery, I resolved to omit for the present the abstraction of this stimulus. But I ordered the fire to be put out; I removed the stimulus of light; I would allow no one to sit in his room, or speak to him: to take off the stimulus of food from the stomach I gave him an emetic of tartarized antimony; and to take away all stimulus from the intestinal canal, I ordered a cathartic of rhubarb quickened by vitriolated kali. During the operation of these, I applied a very large blister to the chest, the stimulus of which I conceived would do no harm under the operation of the cathartic, and might do good by deriving from the lungs, and afterwards by drawing off the serum of blood, which is a species of half bleeding. To supply oxygene without caloric, I ordered from six to ten lemons in the twenty-four hours, in tamarind drink. Not contented with this, I wished the famished system to absorb as much fixed air as possible, (whose sedative power on the heart and arteries is sufficiently proved) and he took therefore yeast in his acidulated water, and he was ordered frequently to plunge his arm in this fermenting ingredient. I ordered two grains of calomel to be taken at bedtime, the acid drink to be frequently repeated with the yeast,

and

and I encouraged no hopes in my patient, and in the morning he was to take the cathartic before-mentioned, to which was added half a grain of tartarized antimony.

The next day I found the pulse of my patient less oppressed considerably. I asked him to attempt an inspiration but he could not bear it. The want of sleep was now easily accounted for. The lungs being in part a voluntary organ, as distention of the vesicles was acute agony, the mind was kept constantly alert in preventing a too free respiration, hence perhaps the reason why the breathing was also quick and laborious.

He had no return of delirium. I repeated the purges on the two following days. The pulse became softer; the tongue looked less white; the thirst was abated; the breathing relieved; he sweated profusely; and began now to covet some food. I now admitted the stimulus of light; I raised his hopes; and progressively adding different stimuli, I came to bark; and in less than three weeks he was about on his business and as well as ever.

Nearly about the same time I was called in to attend Mrs. Eaton, at Shepherd's Market. Her disorder seemed less confined to the pleura, and extended more over the mucous membrane of the lungs. Her pulse was 112, tense, full, and intermittent; her respiration extremely laborious; her cough very painful; and her expectoration great. The blood taken from the arm exhibited a cupped appearance, and hard coagulum, and the buffed coat, which is perhaps a secretion from the arteries. She was attended by Dr. Reynolds, who wrote to me as follows:

K

SIR,

SIR,

I SHALL be very happy in Mrs. Eaton's having your assistance, and I sincerely hope that her inhaling a reduced atmosphere will be of use to her. Her respiration is at this moment very laborious, if that can be relieved, I trust that she will do well.

Believe me with the highest esteem and regard,

Dear Sir, your faithful Friend and Servant,

H. R. REYNOLDS.

Wednesday, Jan. 21,
5 o'clock.

To Dr. Thornton.



I STAYED four hours with Mrs. Eaton, while I observed the effects of yeast in her case, during which time I gave her near half a pint. Her hands and arms were immersed in this liquid in a state of ferment, and it lowered the pulse to 94, and produced so much coldness, languor and dyspepsia, that for fear of her swooning, the window was obliged to be thrown up to let in the fresh air. The irritation on her lungs, she said, was less, and what she expectorated was easy. She was bled in the evening, but no such alteration of the pulse, or languor was produced from bleeding, as from yeast.—After this operation, for two nights she inhaled a reduced atmosphere, but it occasioned catchings of the breath, and augmented the pain. Only a small quantity being inhaled at each time, from a general law in the animal œconomy, (now beginning to be understood) instead

instead of lessening, it *quicken*^d* the pulse as Dr. Reynolds observed, at the time. As no material benefit was derived from this weak essay, it was omitted, nor have I since tried it. But I have pursued the other mode in two instances with the most pleasing success, not that I would recommend this plan in every case, but only with such patients as are of a weak habit, and who therefore are sooner affected by the abstraction of stimuli. Might it not be conjoined with bleeding; and I must observe in the case of Mrs. Eaton, some Gentlemen of the faculty, who had previously seen her and given her up as lost, are of this opinion, but trials in a Pneumatic Institution would determine this.

From, my dear Sir,

Your ever faithful Friend,

R. I. THORNTON.



Letter from Dr. THORNTON, containing general observations on his experience with airs.

No. 3, Bennet-street, St. James's, August 2, 1795.

DEAR SIR,

IN almost all of the cases in which I have administered elastic fluids, Mr. Hill, whom I have had occasion

to

* I imagine there are few circumstances (I never saw any) in which a lowered atmosphere does not at the moment *quicken* the pulse, while it weakens the action of the heart and arteries, T. B.

to mention as a Surgeon, and who also practices Pharmacy, attended in the latter capacity, and becomes therefore an additional testimony to the efficacy of the vital air. A question will here naturally occur.—

“ *Have not the cases which I have related, or pointed out for your inquiry, been selected from innumerable others ?*” I could on the contrary add considerably

to the list of persons cured: but confining myself to those disorders, which scientific medical men generally allow to be incurable, or at any rate very difficult to cure, I here solemnly declare, that of such cases I have recorded every instance, excepting those of asthma and vitiated ulcers of the leg, where the trials have been very numerous, and almost universally crowned with the most striking success. Out of the many trials in which the super-oxygenated air has been at all employed, four only have terminated in death. Your readers shall be enabled to judge whether the smallest suspicion can fall on the oxygen in any of those cases. One of them I have before related, where there was water on the brain, the second was a Gentleman from America, whom when I first saw, I did not believe that he could survive many days. He had, I suspect, great adhesions, tying up the organ of respiration, and never took an easy breath, but while he was inhaling the super-oxygenated air. He obtained a respite and relief for above two months; when complaining of coach-hire and former misfortunes, he very reluctantly gave up attendance, though the air was offered him free from expence. From almost that moment he lamented to his wife that he had lost his *only support*, and soon after resigned his spirit to that Being from whom it is derived. The third was a Gentleman who had a paralysis of the
lower

lower extremities from a diseased spine. Mr. Cruikshanks, had employed caustics, and other remedies, but without success. When he came under Mr. Hill's care, he could not retain the natural evacuations, and as this last symptom gave me reason to expect, he did not survive to inhale the super-oxygenated air above a dozen times. The fourth was a sister of that experienced Surgeon, Mr. Sharp, in a case of cancer, where I was called in with Mr. Hill, to try the application of fixed air to the breast, and vital air internally; this plan gave some ease, but from the extent of the disease, and severity of the frost our apparatuses were destroyed, which were of glass, and we made therefore here a very imperfect trial.

The vital air, which I have generally employed has been formed from manganese and oil of vitriol, which went through a very careful and tedious process, before it was fit for use. The cautions employed I need not detail, since by Mr. Watt's admirable *Pneumatic Apparatus* the vital air may be obtained pure, and with equal ease, and probably with the same, if not superior qualities.

I am, dear Sir,

Ever sincerely your's,

R. I. THORNTON.

To Dr. Beddoes.

Letter

Letter from Mr. WATHEN PHIPPS, Surgeon.

Pall Mall, Thursday, Aug. 5, 1795.

SIR,

UNDERSTANDING that you are collecting accounts of the various effects either seen or felt from the vital air, I embrace the present opportunity of transmitting the result of two cases to you. I was first induced to recommend the oxygen air, from observing the very happy and immediate effect it had in removing violent spasms, which had resisted in a relation of mine, all medicines for above six months.* Soon after this a very corpulent Lady, of about 60 years of age, applied to me for a chronic inflammation in her eyes: besides which, I found she laboured under the greatest possible difficulty in breathing. She could not even walk from the coach into the house, without stopping more than once to recover her breath. After ordering what appeared to me necessary for her ophthalmia, I recommended her to the care of Dr. Thornton for her dyspnoea, requesting to see her in a week. In this short space of time the amendment exceeded my expectations.—She had walked the greater part of the way from Bloomsbury, to my house; her respiration had become almost free; and her nights better than she had enjoyed for a long time. She continued the use of the oxygene air for a month, and was most perfectly cured, and has never had any relapse. Another remarkable instance of the effect of the oxygene air on the blood, came under my observation last summer, which I cannot forbear

* Of this case there is a short notice in my *collection of letters*. T. B.

bear mentioning. Miss F——,* a young Lady from Scotland, was afflicted with a chronic inflammation of the eyes, which had continued some months before she came to England. The transparent cornea had become opaque, and the eyes otherwise much injured. She was extremely emaciated and so debilitated, that it was with difficulty she walked across the room. A violent and constant pain affected the head, which was relieved only by sleep; which sleep was seldom procured, but from the exhibition of 112 to 120 drops of laudanum, the effect of which was no sooner gone than the pain returned. Every possible means had been used without benefit, when the oxygene air was recommended: after breathing it about ten days her appetite began to return, she was enabled to take an airing in the carriage, and she had several good nights, with a much less proportion of laudanum. I had frequently been in the habit of scarifying the inside of the lower eyelids, from which she always found temporary relief. Prior to the exhibition of the vital air, the blood possessed so few red particles, that it scarce tinged the handkerchief, and appeared more like the stain from yellow serum than from blood. After she had taken the air for some days, it gradually assumed a redder colour, and at last regained its proper red appearance; a strong proof this, of the power of oxygene to change the nature of the blood.

With the sincerest wish for the success of your laudable and humane designs,

I remain, Sir, your very humble Servant,
WATHEN PHIPPS.

To Dr. Beddoes.

Letter

* This case the reader will recollect to have seen mentioned by Dr. Thornton also.

*Letter from Miss STEPHENS.**August 6, 1795. Snow-Hill.*

SIR,

A YOUNG LADY, an acquaintance of mine, aged 20, having been two years ill, and under Dr. Carr, an eminent Physician, at Northampton, but continuing in the same state, she was sent on a visit to me, in order that she might obtain the opinion of some Physician in London. Having had the pleasure to see the greatest benefit derived by a young Lady,* whose case was somewhat similar, from the inhalation of the vital air, I was very anxious for her to make trial of the same means. The countenance of Miss S—— was pale in the extreme ; her lips very white ; her breathing short ; she was incapable of the smallest exercise ; so wearied was she in dressing herself, that even during this trifling exertion, she was obliged repeatedly to lie down ; her appetite was very indifferent ; her spirits low ; she constantly complained of cold ; and towards evening her legs used to swell. When we first went to Dr. Thornton's we were obliged to take a coach there and back, and even the getting out and in, and going up stairs seemed too much for her. At the end of five days, the change in her strength was so great, that she was able to walk back from Great Russell-street, and in getting up stairs, instead of panting for breath at every four or five steps, she could ascend the whole flight with the greatest speed and ease. Her appetite was good ; her spirits raised ; her countenance shewed the signs of returning health ; and

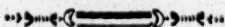
* This young Lady's case has never been mentioned in print. I understand the cure was complete and permanent. With others of the same kind it leaves little doubt of the powers of oxygene in these affections.

and her lips, cheeks, and nails assumed a faint blush, which continued increasing, until she was in *every particular* restored to perfect health, and could walk to and back from Great Russel-street, above three miles, with the utmost ease. When Miss S——, after staying with me five weeks returned to her friends, every one was astonished at the great alteration, and indeed she hardly appeared the same young woman.

I am, Sir,

Your obedient humble Servant,
CAROLINE STEPHENS.

To Dr. Beddoes.



Observations on this Case by Dr. THORNTON.

1. Did not the pallid countenance; the white lip and tongue; the dyspnœa when in action; the semipellucid and polished skin; the want of perspiration; the black and pearly eye; the coldness of the frame; the dyspepsia; the yellow appearance of the teeth; the lowness of spirits; the weak and quick pulse; denote a deficiency of oxygene in the system.

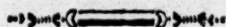
2. If the skin was torn (before the system was oxygenated) there would ooze from the scratch, not blood, but a yellow serum. Is not the predominance of this fluid, the cause of that fallowness of the countenance so frequently mistaken for a disease of the liver, whence these persons have the name of *bilious*?

3. As this young lady had been under such excellent hands, may we not conclude the steel and aloetic cathartics inadequate to the alteration here produced? In other instances the vital air along with these, has succeeded, when either *alone* did not produce the desired effect.

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In

4. In several instances, when the blood has been oxygenated, and the system strengthened, I have employed *electricity* with the speediest effect. In such cases I have not had occasion for aloes or steel to remove the *emansio mensium*.



Letter from Mr. BARR.

Birmingham, 20th Aug. 1795.

DEAR SIR,

REBECCA STANLEY, servant to Mr. Watt, of Heathfield, about 35 years of age, of a slender habit of body and a narrow chest, was seized with the epidemic cold or influenza of last spring, and has ever since been afflicted with a tight dry cough, a pain of her side, and occasional fits of difficult breathing. She would not consent to have any medical advice, and had taken no medicines. A few days previous to my being consulted, she caught cold, which much aggravated all her complaints. The cough became almost perpetual, and on the 28th of July, the breathing became oppressed in a degree truly alarming. She could not bear a horizontal position, but was obliged to be supported upright in bed through the night.

Mr. Watt gave her an emetic early in the evening, which operated well, but produced no relief; ether and other antispasmodics were given, and a large blister was applied to the breast, where a sense of excessive tightness and constriction was felt, but yielded no benefit. She passed a very bad night, and I was sent for early in the morning.

I found

I found her skin hot and dry; her pulse beat between 90 and 100 strokes in a minute, and her breathing was very laborious. I gave her thirty drops of laudanum with a dram of ether in half a tea cupful of water. Her breathing was much relieved by it, and continued so during the day. I advised her to inhale a pint of hydro-carbonate in twenty quarts of common air, in the evening, and repeat the dose, increased or diminished according to its sensible effects, morning and evening; I likewise directed the laudanum to be repeated if urgent symptoms should return; the dyspnoea was still further relieved by the inspiration of the air, and she passed a tolerable night; no more laudanum was given. Next morning she had a pint and half of hydro-carbonate diluted as before. The breathing became very easy; at night she had the same quantity, and slept better. Next day the sense of tightness and constriction in breathing was nearly gone, but the cough continued troublesome. The pulse, was hard, small, and quick, the tongue was white, and the pain of the side was not removed. I took six ounces of blood, which was much inflamed, from her arm, and gave her a quart of hydro-carbonate, which quantity I directed to be inspired night and morning. I also advised three grains of James's powder to be taken every eight hours.

I saw her again on the second of August. All the symptoms were much mitigated. The pulse was reduced to 80, her nights were much better, but the cough was but little abated. The James's powder was directed to be continued a day longer, and the hydro-carbonate for a week; at the end of the week she was in every respect well, except a little cough. I advised the continuation of the hydro-carbonate till the cough
was

was entirely removed. This I found to be the case when I saw her three days ago—she sleeps well, and her pulse is full and regular.

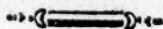
In the beginning of this case the extreme urgency of the symptoms induced me to use active remedies along with the hydro-carbonate, and it certainly did not impede their salutary operation. In the latter stage it had no assistance. Could demulcents, expectorants, or antispasmodics, either singly or conjoined, have done more ? Could they have done as much ?

I remain, dear Sir,

Your's, &c.

JOHN BARR.

To Dr. Beddoes.



Letter from Dr. DARWIN to Dr. BEDDOES.

Derby, Aug. 12, 1795.

DEAR DOCTOR,

IN recording the efficacy of new medicines, cases in which they do not succeed are useful as well as those in which they do.

Mr. W——, about 60 years of age, was afflicted with hydrothorax, which had been gradually increasing for about two years ; he had been six or seven times relieved by taking tincture of fox-glove. He breathed about eight gallons of oxygene gas, from Exeter manganese, every day for about a week ; it was at first diluted with about equal parts of atmospheric air, but he took it after a day or two undiluted, unless by the small
quantity

quantity of air which might be in the hydraulic bellows previous to the introduction of the oxygene.—He did not perceive either any temporary or permanent effect from it. After about a fortnight he was again relieved by the tincture of fox-glove, and again began to receive oxygene, which was undiluted, and took about six or seven gallons every day for about a fortnight, without any apparent effect, except that at last one parcel of air disagreed with him, which was probably owing to some inflammable material, which had incautiously been mixed with the Exeter manganese in putting it into the tube. In a few weeks afterwards he sunk under the disease.

Mrs. S——, a young married lady, with light eyes and hair, had been long confined by a pertinacious headache; and was so far reduced, as not to be able to rise from her bed, she breathed about six gallons of oxygene gas daily, for three or four weeks, which was at first diluted with equal parts of common air, afterwards she chose to take it undiluted. She always found herself revived by these inhalations, and gradually recovered her health, and became stronger than she had been for some years, and freer from the pains of her head. Though these pains of her head probably originated from decaying teeth; yet, as other people experience a decay of their teeth, without violent and permanent hemicrania, there must be some other cause; which may consist in the too great sensibility of the system to this association of the morbid action of the membranes of the teeth, or of the alveolar processes with those about the temple. This sensibility seems to have lessened as the constitution became invigorated.

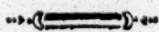
I have

I have only to add, that it is probable, that the quantities of oxygene gas would have had greater effects, if it had been respired in a more dilute state. And that I suppose the inirritability of the lungs to the stimulus of oxygene gas in the former case, might be owing to their being in some degree anasarcaous, like the limbs.

From, Sir,

Your's most sincerely,

E. DARWIN.



Letter from Dr. PEARSON.

Birmingham, Aug. 23, 1795.

DEAR SIR,

WHEN I sent you an account of the effects of oxygene air in the case of the chlorotic girl, Mary Rider, I mentioned that I had also prescribed the same remedy to another patient affected with epilepsy, joined with amenorrhœa. This patient, whose name is Ann Smith, is about 18 years old ; she has been subject to epileptic fits for more than two years. When at the worst she had four or five fits in the day-time, and one or two in the night. At the time the fits first came on, the menses, which had been regular before, ceased, and have never returned since. Several years ago she was troubled with worms ; but it does not appear she has them now. These particulars relative to the history of her case, have been collected from her mother, as the patient is incapable of giving an accurate account of herself, her understanding and memory being so much impaired as to amount to some degree of idiotism.

It was in January last, that she first breathed oxygene air, the application of which, after two or three doses, was then interrupted by the accident mentioned in my former letter. About half a year afterwards, viz. on the 4th of July, this remedy was repeated; she breathed 226 cubic inches of oxygene air largely diluted with common air. This application was continued till the 22d of the same month, (i. e. nearly three weeks), towards the end of which time, the dose of the factitious air was increased to as much as 678 cubic inches. The inhalation was now discontinued, as it did not appear to be of any service. Scarce any difference was perceivable after the inspirations, except that the pulse was fuller and quicker, and the countenance more coloured. But these effects must be owing (at least in part) to the efforts of the patient in drawing in the air from the bag, and to a greater expansion of the lungs (in consequence of fuller inspirations) than happens in ordinary breathing. It is noted in the minutes of her case, that on the 20th of July, she said, she had not had so many fits as usual; but I am unwilling to give credit to her own words, and the more so, as about a fortnight afterwards, upon inquiry of her mother how she went on, I was told she was not at all better.

This short statement is extracted from the journal kept at our hospital. To go more into the detail of a case which is indecisive either one way or the other, I thought would be useless. In the instance of epilepsy of which you have given an account in one of your publications, the symptoms were aggravated by oxygene air. In the present case, if it did no good, it did no harm. Whether in less complicated cases of this disease

case

case it is capable of giving relief, is a question which remains to be determined by future experience.

It is noted in the minutes of the hospital-journal that the patient sometimes appeared more lively after inhaling the factitious air; and one day she complained of a pain in her stomach. This circumstance shows that her feelings were rendered more acute by the use of this remedy. May we not then infer, that oxygene air would be serviceable in cases of amentia or fatuity?

In this epileptic patient, I suspect some organic affection of the brain; which explains why the oxygene air, though administered in such large doses, produced such little effect.

I am, Sir,

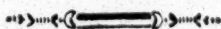
Your's truly,

To Dr. Beddoes.

R. PEARSON.

P. S. So much has lately been said in favour of yeast, as a remedy in typhus and other disorders, that I have been induced to take some notice of it. Those who have written about it, do not seem to have understood its nature thoroughly. They have looked only to the carbonic acid which it contains, without being aware of another active ingredient in its composition; I mean the *bitter principle of the hop*, which is present in a very concentrated state in yeast, and is highly narcotic. It is to this principle that I ascribe the violent effects which I have known yeast to produce when given internally. I have been witness to its operation in two cases. Neither of them were fevers. In the first, the vomitings,

vomitings (which had come on before) were increased by it; and in the other instance it purged violently. In respect to its use *internally*, I cannot help looking upon it as a very doubtful remedy; but I can bear testimony to its good effects *externally*, in cutaneous affections. It should be observed that there is a great difference between *old* and *new* yeast. By keeping, much of the carbonic acid air escapes, the mass becomes less frothy, and its parts are brought into closer contact: hence old yeast, is bulk for bulk, much stronger than the new. I suspect, too, that in proportion as it loses its carbonic acid air, it becomes more powerfully narcotic. It is therefore a necessary precaution to proportion the dose according to the quality of the yeast. The old is at least twice as strong as the new.



THE reader will recollect the interesting case of I. T. so minutely detailed by Dr. Carmichael, (Confid. 2d. ed. p. 87.) He had in Nov. 1794, an almost incessant cough, with copious expectoration, sense of tightness across the chest, much dyspnœa on the slightest exertion, pulse 110—120—nights restless, attended with profuse perspirations, and much emaciation. After a course of hydro-carbonate air, without medicines, he was strong enough by the end of February, 1795, to determine to return to his usual occupation. The following letter tells the event.

T. B.

Letter from Dr. CARMICHAEL.

DEAR SIR,

I NOW communicate to you the sequel of I. T.'s case. On the 1st of March 1795, (the date of the last report) he was continuing to gain strength, his cough was less frequent, the quantity of matter which he expectorated was small, his appetite was good, and he slept well. He found himself so well in every respect that he became anxious to return to his employment, and as I could not prevail upon him to desist from his intention, I advised him first to inure himself gradually to the cold, by walking out a little daily. He complied with my advice, and continued to gain ground till the 9th of that month, when in the evening he was seized with the usual symptoms of the influenza, an epidemic catarrhal infection, which at that time prevailed much in this place. The febrile symptoms ran high, and were attended by frequent cough and considerable pain in his side; he complained also of severe head-ache and unusual languor, he was thirsty, his tongue was white, his pulse 110.

15. Febrile symptoms continue; cough frequent but now attended with increased expectoration; pain of his side less severe; considerable dyspnœa on the slightest motion; pulse 115, small and weak. Until this attack he inhaled twice daily a gallon of hydro-carbonate, diluted with four times the quantity of atmospheric air, but as his strength wasted, it was found necessary to lessen the quantity to one quart diluted as above.

20. Pain of his side something easier, but his cough increased in frequency and his expectoration is more copious

copious. Restless nights; no appetite; strength so much impaired, that for the last four days he has not been able to inhale the modified air; pulse 120. I directed a warm stimulating plaister to be applied to his side, and five drops of tinctura opii to be given every four hours.

28. Pain of his side gone, but his other symptoms continue; bowels regular; has had better nights, but his sleep has been attended with profuse perspirations; the tinctura opii was omitted, and he was directed to take at nearly the same intervals a small glass full of port wine.

15th April. Complaints continue without material alteration. From this date he recommenced the use of the hydro-carbonate, beginning with it of the strength of one pint to sixteen quarts of common air.

25. At first the modified air occasioned considerable vertigo, but he soon became so much habituated to its operation, that the quantity was increased to one, and afterwards to two quarts. His perspirations have abated, his cough has been less urgent, the quantity of his expectoration has diminished, and the dyspnoea, with which he has for some time past been troubled on the slightest motion, is greatly alleviated.

3d May. Since last report he has experienced considerable amendment, pulse 98. The quantity of hydro-carbonate was further increased to a gallon diluted with four times that quantity of atmospheric air.

15. He has continued to recover so much in every respect, that yesterday he walked, not without difficulty, fourteen miles into the country.

From

From this time I did not see him till the middle of June, when he returned to this place with an intention to follow his usual occupation. He was in every particular so much better, that he seemed to have recovered completely the ground he had lost. I advised him to the country, to which he consented, and he has since been occupied in hay-making, and more lately in reaping. I saw him a few days ago ; he cannot be said either to cough or expectorate, except of a morning, and then in the most trifling degree, and his strength is so completely restored that he has been earning wages equal to those of the stoutest of his fellow-labourers, with ease to himself and satisfaction to his employer.

I am, dear Sir,

Your's sincerely,

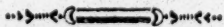
JOHN CARMICHAEL.

Birmingham, 25 Aug. 1795.

To Dr. Beddoes.

My asthmatic patient I. B. continues perfectly well. I cannot say so much for the chlorotic girl. By the use of oxygene her health has been amended four several times, but the menstrual evacuation has never yet taken place.

I. C.



Letter from Mr. ROLPH, Surgeon.

Thornbury, Aug. 7, 1795.

DEAR SIR,

IT is with peculiar satisfaction I inform you my oxygenated patient continues improving in health, and from present appearances, there is little doubt of his perfect

perfect recovery. I here send you his state of health, previous to his commencing a course of oxygene air, and his daily report since.

W. Trayhern, aged 35, by trade a tailor, had about the middle of June, 1793, a slight discharge from the urethra, for which he took some pills prescribed by a medical gentleman at Bristol; in the course of seven or eight days after he complained of a violent pain in his foot, which also appeared tumefied. By the advice of an old woman he bathed it with palm oil and rum, by which means the swelling was in a few days reduced, and the pain mitigated. He remained tolerably well for three weeks or a month, at which time he experienced violent pains in the hips, which confined him to bed for three months; his arms also at the elbow and shoulder joints became much affected, and remained so nearly the same space of time. After this he felt himself better, but a constant sense of coldness remained, together with lameness and pain, especially about the hips. In the latter end of Dec. 1794, the sense of coldness increased, and in a few days after his joints were more violently affected. At this time it was recommended that he should use mercury, in order to excite salivation; from an idea, that his complaints originated in the discharge he experienced in June, 1793. Being assured this would shortly restore him to health, he followed the advice. A short time after salivation commenced, there was a violent hæmorrhage from the gums, he says nearly two quarts. But so far from experiencing the promised relief from this expedient, his pains and difficulty of motion were much increased. He had no power over the muscles of the
left

left leg and thigh ; so that whenever he attempted to walk with the assistance of a strong stick in each hand, he was obliged to exert the muscles of the abdomen and pelvis in a very peculiar way. Indeed the muscular activity was so generally impaired that he could not turn in bed without somewhat to hold, and even then the exertion was most painful. He had been unable to turn in bed for a year and half ; and for eight months unable to stoop. His nights he passed in pain, and generally was a stranger to sleep. Though his appetite was good, his body was greatly emaciated, and during unsettled weather he felt intolerable pains. When he ventured out he was truly a spectacle that could not fail to excite the attention and commiseration of every one he met. In this deplorable state he was pointed out to me, on Saturday July 4, 1795, by a gentleman in the neighbourhood, of great humanity and observation : on Sunday the 5th, I had a conversation with him and learnt the above particulars.

As there did not appear to be any organic affection, I determined to try the effect of oxygen, which from the general state of the muscular system seemed to promise relief. Being not then provided with any air, I begun on Monday the 6th, with giving him pills composed of bark and steel, and an opiate at night : Tuesday felt as usual ; Wednesday he inhaled three quarts of oxygene gas, mixed with so much common air as to fill the bag ; the medicines were continued ; Thursday he had a good night, in other respects he felt as before ; Friday he had a good night, and to use his own expression, felt himself lighter ; Saturday he thought he moved with greater ease and less fatigue ; Sunday he

he was better, and able to turn himself in bed; Monday muscular motion performed with greater ease, and he was able to stoop to pick up any thing from off the ground; which he had not been able to do, as I before observed, for eight months; Tuesday he passed a good night, and felt himself warmer than before: in the morning came down stairs, and walked to my house, the distance of 100 yards, with the assistance of one stick only; Wednesday in a mending state, he felt such a genial warmth all over him as he had not experienced since 1793. Thursday as the day before; Friday he felt himself stronger and a greater glow through the whole frame. Saturday he walked a short distance on plain ground without a stick; Sunday, Monday, and Tuesday in the same state; Wednesday notwithstanding change of weather, he did not feel those pains he had been accustomed to. Thursday he was able to bend the left knee in walking; Friday complained of great pain in the heel and a little in the knee; his medicines were discontinued and a quart of oxygen added; Saturday as the day before; Sunday the heel and knee were relieved, passed the night free from pain, but without sleep. Monday he had a restless night but free from pain, is able to walk several hundred yards upon plain ground without a stick; Tuesday he had a restless night, but in no pain, walked with the assistance of one stick nearly a mile; Wednesday had little or no sleep, but free from every uneasy sensation. He sat at work cross-legged the whole day, which he had not been able to do for two years and better.—The anodyne pill was again taken. Thursday he slept well; Friday he complained of slight pain in his hips; Saturday he was better. He began inhaling the fac-
titious

titious air twice a day, omitted the opium and slept well. Sunday, though the weather was very stormy, and such as greatly affected him before the use of oxygen, yet he found himself quite free from pain.—Slept well without opium. Monday free from pain, continues mending; his countenance evidently altered for the better, and he regains flesh. Tuesday went to Bristol in a cart, and there to continue a few days. Slept well without opium.

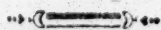
In regard to your little patient, I have the satisfaction to say he is *much* better, from the use of yeast and carbon. I have in several other instances experienced its beneficial effects, particularly in one case; a child long afflicted with scabby face, and become a sad spectacle, obtained relief in a few days, and the face was perfectly clear in three weeks.

I am, your's,

With respect,

THOMAS ROLPH.

To Dr. Beddoes.



The Case of Dr. CRAWFORD, Physician to St. Thomas's Hospital.

To Dr. Beddoes.

Bennet-street, St. James's, Aug. 20, 1795.

DEAR SIR,

AS every incident respecting a character of such celebrity as Dr. Crawford, must interest the public at the present moment, I am happy that the conversations
which

passed betwixt him and me, were held in the presence of others. Having related to him some cures performed by a *reduced atmosphere*, which I propose at some future time detailing at length; I next represented my own situation, and attributed my recovery from phthisis 1st. to my breathing an atmosphere with a diminished proportion of oxygene; 2dly to my exhausting that principle by continued exercise on horseback, as well as from the quality of my food; and 3dly, to my increasing the powers of the absorbents by the vertiginous motion on ship board, and now and then by a nauseating emetic.

I mentioned also my freedom from complaints in my chest, while in the moist air of Cambridge, and that having not long back gone to Oxford, to see some friends at the University, I was almost immediately affected with pains under the sternum, and had other marks of pulmonary affection. "You are right," Dr. Crawford exclaimed with an emphasis I shall never forget, so contrary was it to his mild character. "I was obliged to remove from the sharp air of Kentish-town, which I am certain did me harm, to the softer air of Somerstown; but in my case there are counteracting causes, and my stomach and bowels are in so weak a condition, that I fear I shall not be able to give your air a fair trial. Nevertheless, I am fully persuaded of the theory suggested by Dr. Beddoes, and I have endeavoured to make its importance be attended to by the faculty; and if the hydro-carbonate does not succeed with me, it will be understood why those who have weak digestive organs stand a poor chance in pulmonary complaints, which is a still further corroboration of the justness of the

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" theory

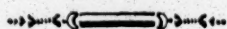
" theory." We discoursed then on the theory of the
 hydro-carbonate, and he was of opinion with you,
 " that as this factitious gas produced a far greater effect
 " on the animal œconomy, than either inflammable or
 " azotic gases, its action could not be solely the exclu-
 " sion of oxygene from the blood, but that the carbon
 " combined with the small portion of oxygene already
 " there, and formed with it fixed air." Having pre-
 pared the hydro-carbonate according to the direction
 of this able chemist, Dr. Crawford inhaled after dark
 nearly a quart diluted with 500 pints of common air.
 He declared " that it transfused over his body at the
 time a *soothing tranquillity*, such as opium is known
 to produce, but with slight vertigo." The following
 day he mentioned to me and Mr. Hill the circumstance
 of the *correction* of the offensiveness of his expectora-
 tion, which he said, " he wholly attributed to the hy-
 dro-carbonate air, as he had often taken myrrh and
 " quassia without this effect." Dr. Crawford omitted
 the laudanum at night, which he had been accustomed
 to take to check a diarrhœa, which disorder unfortu-
 nately recurring, he was defeated in his hopes of the
 hydro-carbonate supplying with him the use of opium.
 He however inhaled a second and third time the mo-
 dified air, soon after which he went to Lymington,
 " with a fever," as he told me, " on his spirits," and
 there in a few months this great and good man paid the
 debt to nature. Nearly about the same time I was
 requested to go to Southampton, to attend Mr. Adams,
 the optician, who laboured under a similar disease of
 the chest; so reasonable are the suggestions, which the
 new chemistry has introduced into minds nurtured in
 philosophy; I have only to regret, that my medical
 engagement

engagements in London, were such, as prevented my making in these interesting cases a full trial of the aerial practice.

I am, &c.

R. I. THORNTON.

AT the time of Dr. C.'s inhalation of hdc. I received an account corresponding with the above ; but had no idea of putting it into print, supposing that three quarts of hdc. taken at three different times, in a case of consumption, were much the same as if none had been taken. It is only in compliment to Rumour, that I now publish a fact so totally irrevelant. T. B.

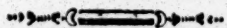


Note from Mr. Yonge.

August 27, 1795.

I TRIED by way of experiment how long I could retain one inspiration of common atmospheric air, with a stop-watch before me, and found it to be twenty seconds. I then inhaled common air mixed with nearly an equal part of oxygene air which I suppose enabled me to retain it 32 seconds. Lastly, I inhaled oxygene, such as manganese yields. This was retained, by nearly the same effort 55 seconds, without that sensation of heat in the stomach, which resembled the feel occasioned by weak peppermint-water, and which I had experienced before, upon inhaling diluted oxygene.

GUSTAVUS YONGE.



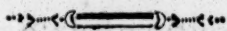
Note from Mr. R. Edgeworth.

June, 1795.

I CAUGHT cold : next day had great tightness over my chest. I breathed at several intervals a bag of modified air ; during the time I felt giddy, and was obliged

obliged to desist for some minutes. My tightness however was completely carried off and did not return. My cold became quite trifling. R. E.

The quantity of air respired was five quarts of hydrogen with near 35 of common air.



Letter from Mr. SANDFORD.

Worcester, August, 1795.

DEAR SIR,

WHEN I had the pleasure of spending a few hours with you sometime since at Clifton, I think you informed me that you were of opinion, the carbonic acid air might be useful in consequence of being absorbed by the skin, though there should be no breach or ulceration. This conversation I believe arose in consequence of an idea suggested by Mr. Jeffreys, viz. "whether it might not be found advantageous in cancerous diseases, *before* ulceration commenced, to puncture the tumour in order to admit the aeriform remedies."

That the virtues of charcoal when *externally* applied, have been manifest *without any ulceration*, the following reports, will, I presume, be admitted as proofs.

CASE I.—T. P. æt. 54, came to the Worcester Infirmary May 24, 1795, with a mortification of the left foot and leg, extending half way up the thigh. About a fortnight before his admission, Dr. Johnstone being at the house where the patient resided was desired to visit him. The Doctor has since favoured me with an
account

account of the state in which he found him. " His
 " pulse tremulous and vacillating, very low and quick,
 " his foot swelled, and the leg as high as the calf of
 " a dark gangrenous colour, with slight vesications.—
 " His abdomen, inflated, hard, and tumid, with fre-
 " quent evacuations of thin dark coloured fæces; his
 " tongue black and dry, extreme restlessness and low-
 " ness: I allowed him cider in abundance, and pre-
 " scribed Cort. Peruv. pulv. 2 scr. Cascarill. scr. ℥. M.
 " alternis horis ex Cyath. Vin. Oport. rubr. The
 " carbonic cataplasm, prepared in the manner men-
 " tioned in the 2d. edition of *Considerations*, p. 125.
 " was ordered to be applied, and I advised the patient
 " to go to the Infirmary."

He was admitted an in-patient as before-mentioned,
 on my day of receiving patients. The poultice had
 by this time produced a great change for the better,
 in the colour and appearance of the leg and foot, but
 the thigh was now also become hard and inflamed.
 Some of the vesications had terminated in small ab-
 scesses, which discharged good pus. The charcoal
 poultice which seemed hitherto to have had so good an
 effect in checking the progress of gangrene *before* any
 ulceration had been formed, was still continued, and
 with the most beneficial effects; he was put upon a
 course of the extract of oak bark with Cascarilla, and
 took likewise lb. ss. of port wine made into negus, at
 first in the course of 12, and afterwards in 24 hours.—
 The poultice was continued to the leg and thigh, for
 upwards of a month after his admission, and was then
 laid aside and mild digestives were applied to the small
 ulcers which were even now very numerous, and prin-
 cipally

cipally situated in the general direction of the external lymphatics from the foot to about the middle of the thigh : these, though very troublesome and painful during their formation soon granulated with a healthy aspect : and when his appetite was restored, he laid aside the use of wine and was allowed lb. fs. of ale per diem, in its stead. He took occasionally a grain or two of opium at bedtime, when the pain in consequence of the formation of the little abscesses required it—these were all suffered to break spontaneously, and of course healed sooner.

The man was discharged with the perfect use of his limb, and August 1st, was made an out-patient till he recovered his general health.

CASE II.—W. G. æt. 75, was entered in the list for admission as an in-patient of the Worcester Infirmary, Saturday July 4. At that time there being no room in the house, he was obliged to remain an out-patient till the following week. He had at this time several swellings of the carbuncle species, extending from the neck along the course of the lower jaw on the right side, and one, particularly hard and livid, just below the condyle of the jaw ; his pulse was feeble and, his whole frame in a state of extreme debility. Dr. Seward, the receiving-physician of the week, examined him with me, and recommended a generous diet, together with bark and opium internally. Though I almost despaired of any good effects from the application of charcoal *before* he could be taken into the house, yet I determined to make a trial of it in this case, and the man's wife (who came with him) appearing an intelligent woman, I gave her directions how
to

to prepare the poultice, to which she promised faithfully to attend. The Saturday following a bed was reserved for him in the Infirmary, and I was very much surprised to find the extraordinary good effects the treatment had produced. It was not found necessary to continue the poultice after his admission, more than three or four days, every symptom of gangrene had disappeared; his appetite began to return, and he was now directed to take the extract of oak bark with aromatics and chalybeates. Some of the swellings had entirely subsided, and the largest was considerably reduced, and discharged a small quantity of well-digested matter. A plaister of soap cerate with camphire was applied over the tumour, and renewed every second or third day, as occasion required; this in a short time removed the hardness, and the man after being three weeks in the house, was recommended to go into the country again, in order to establish his health, which had been much impaired by his complaints.

CASE III.—E. M. æt. 40, had been troubled upwards of two years with an affection of the nose, that withstood a variety of applications, as well as internal remedies. For the last twelve months she applied mercury in various forms to the part, and took many of its preparations internally, joined at different times with antimony and hemlock; poultices and fomentations of hemlock were also had recourse to, and persisted in the use of, for a considerable time without affording any relief. For the last month she has applied the carbonic poultice in the evening, and kept it to the part till the next morning. *This* application has already produced the most beneficial effects; though fixed air had been applied in immediate contact with
the

the part, from the mouth of a phial containing the effervescing mixture, without effecting any relief. The point of the nose, which had lately a very carcinomatous appearance, has now lost its hardness, inflammation, and pain, and the small tubercles and cracks have entirely disappeared. How it may finally terminate it is impossible for me to pronounce, but since the charcoal-cataplasm has been applied, its general appearance has been much more favourable than from any previous mode of treatment. The sequel of this case you may depend upon having.

When still farther experiments have been made with charcoal, it will, I doubt not, be found one of those singular substances, whose peculiar effects have for a great length of time escaped the observation of men of science, till by the recent discoveries in chemistry its extraordinary powers were made known to society.

I am, dear Sir, your's, &c.

To Dr. Beddoes.

W. SANDFORD.

P.S. A Lady to whom I recommended the use of charcoal-powder as a dentrifice, was subject at times to violent tooth-ache, from one of the dentes sapientiae that was become carious. She one day when in great pain filled the cavity of the tooth with the charcoal dentrifice, and was surprised to find herself in a few seconds perfectly free from pain. It might probably be urged, that any substance filling the hollow of the teeth mechanically, and thereby preventing the access of atmospheric air, would produce the same effect. But I am rather inclined to attribute the *temporary* good effect experienced in this case, to the power of the charcoal—*Query*. Could the oxygene in the tooth by a combination of these two principles act as carbonic acid air?

August

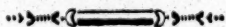
August 30, 1795.

I HAVE now the pleasure to inform you that E. M.'s nose is perfectly well. This is a proof of the singular efficacy of charcoal after the failure of every other medicine.

W. SANDFORD.

I HAVE endeavoured elsewhere to shew that carbonic acid specifically stimulates the absorbents. The softening of glands was very evident in a case of cancer—I think charcoal has the same property. This important case seems to prove it. For how could the tumid nose be reduced without greater action of those vessels? In the application of charcoal poultice to bad legs where the skin was broken I have seen other proofs of this fact.

T. B.



September 3, 1795, Bennet-street, St. James's.

DEAR SIR,

IT gives me sincere pleasure to be able to send you the following very satisfactory letter, which completes the evidence in favour of your opinion, respecting the effects of super-oxygenated air in cases of *ill-conditioned* ulcers of the leg. The reader will find these views in the letter to Dr. Darwin, which you published June 20, 1793, page 56 to 59, and which led me first to the trial of the vital air in the complaints you enumerate there.

I am, &c.

R. I. THORNTON.

O

September

September 1, 1795, Store-street.

SIR,

I WAS about eighteen years distressed with a dreadful humour covering the whole of the lower part of the left leg. It arose from water first in that part, and a tendency to the dropsy. I was four years under Surgeon Pott, 27 months under Sharp, 9 months under Blick, 27 months under Wade, and for some time under other eminent surgeons, but the humour continued as before. Previous to my attendance on Mr. Hill, I was very bad indeed, in great pain, and not able to walk fifty yards. After a fortnight from inhaling the vital air, I felt a most intolerable itching in the leg, and soon after the humour scurfed away, and the leg was healed. It is now eleven months, and I have felt no pain whatever, nor has even a pimple appeared on the part, and as before I could not walk an hundred yards, now nothing impedes my walking but my corpulency, which arose from my former confinement.

I am, Sir,

Your obedient Servant,

ELIZ. MUNT.

To Dr. Thornton.

Observations on this case.

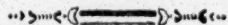
1. IN fat people I have observed that super-oxygenated air usually creates some disturbance in the stomach. This at first surprised me, but did not the super-oxygenated blood feed upon the elements of fat, and thereby prevent the supply of food from the stomach, and that organ being robbed in some measure of its office, might it not at first feel the want of its customary action?

4. Fat

4. Fat people I observe are longer in consuming a given portion of air than others.

5. In the present case strong occasional evacuations were employed. In the intervals bark with the tincture of the same, and myrrh were given to strengthen the fibre and promote the consent which exists betwixt the stomach and the lungs.

6. The average dose of air employed, was 1500 pints of atmospheric air, super-oxygenated with from three to four quarts of vital air. R. I. T.



August 1, 1795. Islington.

SIR,

FOR more than two years the whole surface of my face was covered over with eruptions. To describe my real state would be as disgusting for you to hear, as it was disagreeable for me to bear. I had tried different purifiers of the blood, but the humour in my face continued the same. Hearing that the vital air altered the state of the blood, about nine months ago I placed myself under Dr. Thornton's care, and began the inhalation of the vital air. In less than ten days I felt a very great itching, which I do not remember to have had before. The itching however subsided, and my face was quite cleared in about a month. This state continued four months, when I had a relapse, but it soon gave way to medicine, and my face has continued since perfectly clear or only here and there a pimple appears.

I am, &c.

JOHN CUMMINS.

Observations

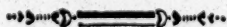
Observations on this Case by Dr. THORNTON.

1. THIS patient in early times had led rather a free life, and of late he could not get to sleep unless he took a certain portion of wine in the day. Does not this case, therefore, confirm your opinion respecting the effects of vinous liquors, and did not the hydrogenous principle which abounded in his system manifest itself by the humour covering his face?

2. As the same quantity of liquor was taken as before, and only three six-ounce phials of bark with myrrh, may we not ascribe this cure chiefly to the artificial oxygenation of the system?

3. As the body abounded in hydrogene, a larger proportion than usual of the oxygene air was given this patient, and it produced at the time a strong perspiration, and seemed, as he expressed it, to search every part of his body.

4. When the relapse occurred, he took an oxyd of mercury, and the oxygenation of the system through this means produced the same effect; but as being productive of nausea, and violent griping; is not the oxygenation of the blood by the lungs, a more elegant and preferable mode? My patient observed, that while taking the vital air his strength was increased, but when under the course of mercury it was greatly diminished.



Observations by Dr. THORNTON, on the latter part of Dr. PEARSON's Letter.

AS the public are so easily *prejudiced* against *new remedies*, and wish ever to be cured by inert substances,
acting

acting like charms, it may be necessary to comment on the evils that are said to arise from yeast, as mentioned by this judicious physician. To ascertain the action of remedies is of the first consequence; to discover their mode of action is the next, which paves the way for future improvements, and distinguishes the physician from the empiric. In no instance has vomiting occurred with me, from the exhibition of yeast (the stomach and bowels being first cleansed) but such effects as resemble *hysteria*, and the continued eructations of air, seem in my mind, to indicate the *modus operandi*. It was curious to observe, that when my patients plunged their arms into yeast in a state of fermenting, it produced *eructations*. I happened lately to get a dreadful scald, and the pain was excessive; I tried yeast poultices, and obtained almost instant ease. Do not the effects of the fixed air, and of the carrot and yeast poultices in cancer, clearly shew that they act by one and the same principle? The same may be observed of mortification. Knowing the effects of wind on the stomach, can we then doubt of this being the prime agent? Not that I mean to deny the *bitter principle of the hop*, any more than the neutral basis of the effervescing mixture: but I would place it in the secondary station. The question was I think cleared up by the Geneva, which soon banished the wind, and gave relief. It may at once be decided by this able chemist, if he will first extricate the air from the yeast, and then exhibit it in cases which may demand its bitter and narcotic qualities.

*Letter from Dr. THORNTON,
On Inoculation.*

Bennet-street, St. James's, Sept. 1, 1795.

DEAR SIR,

THERE is no plausible reason against *general inoculation*, but the danger which pregnant women run.— From your explanation of the change wrought on the constitution by child-bearing, I conceived an hope, that this great improvement in medicine, admitted even of farther perfection. I fixed upon the month of May, 1794, to ascertain this point, and as the small-pox is evidently inflammatory, I chose this month in preference to March or April, when the fibre, rendered more irritable by the preceding winter, is strongly affected by every stimulus; as also for another reason, in order that my patients might live upon gooseberry food, which is not only pleasant and nutritious, but affords to the system *oxygene* uncombined with *caloric*, and acts also as a mild aperient. Having first well cleansed the intestinal canal, with rhubarb and vitriolated kali, I followed your idea of greatly diluting the variolous matter,* and in order that as little as possible might be carried by the absorbents into the system, I gently raised with a lancet the skin on the deltoid muscle of the left arm, and when all inflammation was subsided, I inserted under the small scratch the dilute variolous matter with the point of a needle.

In the first trial a circle of inflammation, resembling the bur of the moon in a misty night, was observed around the place where the variolous water was inserted, and the arm rose a little, but no eruption whatever appeared. Mr. Sadler, who lives at No. 86, Tottenham-

* See the observations subjoined to the translation of Mr. Gimbernat on Hernia.

Fig. 1.

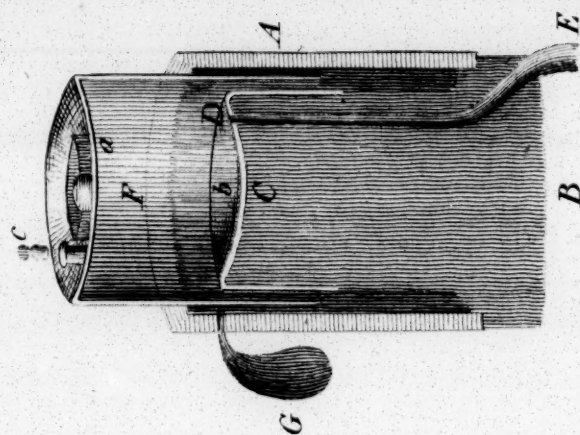
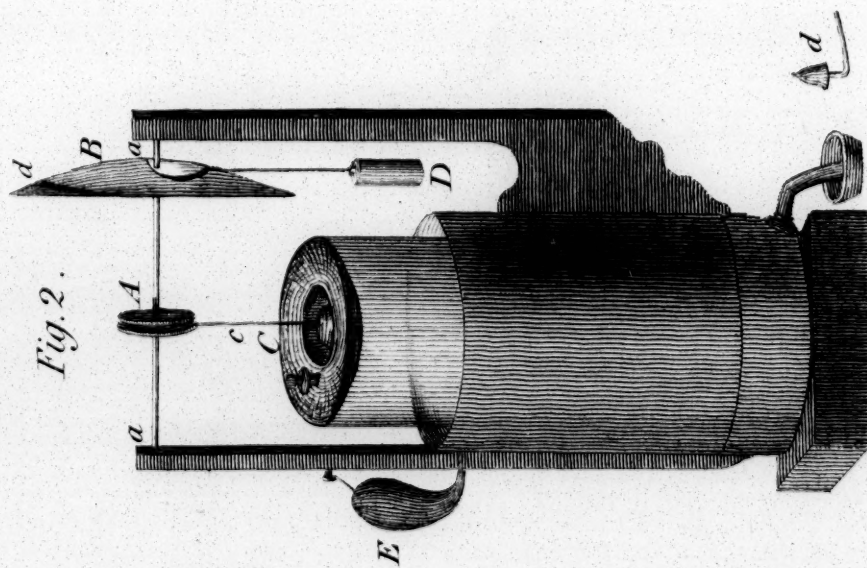


Fig. 2.



Tottenham-court Road, seeing the young lady have the disorder so remarkably kind, wished me to inoculate his only child, and I pursued exactly the same plan.—No rising of the arm, or eruption appeared; one day only the little girl complained of head ache. I have also had a third example, and no eruption whatever has appeared, or any after-evil, and the little patients have enjoyed uninterrupted health, and they have been exposed frequently to the infection, without having taken it, which leads me to the persuasion, that they are perfectly secure, and to hope that *the only objection* against *general inoculation* may by an attention to the suggestions you have given, be at last obviated, and the disease rendered universally mild: but this I mention only as a supposition, to be refuted or confirmed by future experience.

I remain, &c.

R. I. THORNTON.

P. S. Mr. C. Gimbernath informs me that the practitioners in Andalusia, give *vinegar* to their small-pox patients with the greatest success.



Description of a MERCURIAL APPARATUS, suggested by an inspection of Mr. Watt's Machine for producing and containing Factitious Airs, by Mr. WILLIAM CLAYFIELD, Bristol.

PLATE III. Fig. 1. represents a section of the machine, which consists of a lignum vitæ cylinder A. screwed to the solid block B. covered at top by the glass cap C. having a hole at D for the passage of the air through the conducting-pipe E. into the moveable glass receiver F.

To

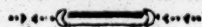
To an axis turning on the points *aa*. fig. 2. is adapted the wheel *A*. of such a diameter, that by the winding of the cord *c*. in one revolution, the receiver may be raised to the surface of the mercury. To one end of the same axis is fitted the wheel *B*. over which the balance cord runs in an opposite direction in the spiral groove *d*.

Suppose the receiver to be loaded with a weight *C*. something heavier than may be necessary to force it through a column of mercury of the same depth, and that the balance weight *D*. equal to the excess, hangs from that part of the spiral where the radius equals that of the wheel *A*. and in proportion as the column of mercury forcing up the receiver, diminishes during its filling, let the radius of the spiral increase; so that in every situation the weight *D*., may be an exact counterpoise to it. As in this way the least possible friction will arise, plunging the orifice of the tube *E*. a quarter of an inch below the surface of the mercury, contained in a separate vessel, will be found sufficient to overcome every resistance, and will force the gas discharged from the beak of a retort into the receiver where, whatever may be its quantity, it will sustain a pressure exactly corresponding with that of the atmosphere; and by graduating the edge of the wheel the balance cord may be made to indicate its volume.

The convexity at the top of the receiver *a*. fig. 1. fills up the concavity of the cap *b*. for receiving the fluids it may be thought proper to introduce, by withdrawing the ground-stopper *c*. and in the same way we introduce a lighted taper; or a fluid may be drawn to the cap, by only plunging the orifice of the tube *E*.
below

below its surface, and then raising the cylinder ; by closing this orifice with the perforated cork and bent tube d. the air may be conveyed from the cylinder to any other vessel. The gum elastic bag at G. fig. 1. is intended to contain the mercury displaced by the descent of the receiver which may be returned during its rise, by inserting it as at E. fig. 2. The joint at the screw must be carefully secured with thin soft leather.

W. C.



CONCLUSION.

THE continuation of my experiments on animals and animal substances, I find it necessary to defer, not having yet provided myself with an apparatus accurate enough to determine the quantity and quality of the residuary air.—Meanwhile, any person may see the extraordinary *reddening* effect of hydro-carbonate air, by suspending a small slice of veal in a phial filled with this air. Hydro-carbonate air is not decomposed by blood or flesh so as to be rendered more inflammable. On the contrary, hydrogen from zinc is rendered less explosive : whether one or the other is absorbed remains to be tried.

Numerous trials having been made with airs in medicine, with so little detriment, or with success so considerable as to warrant a prosecution of the practice, I have annexed a synoptical view of the published cases. This view will lead to reflections on the effect of unusually deep inspirations simply, and of various degrees of dilution of artificial airs. On the subject of dilution I have to add the following memorandum from Mr. Watt. It respects his letter, p. 34, 35. “ Though I

P

“ mentioned

" mentioned to Dr. Thornton my approbation of di-
 " luting the factitious airs in general, I had no idea of
 " carrying it so far as he has done. My notion was,
 " that the airs might be advantageously mixed with 30
 " or 40 times as much common air, when they are to
 " be breathed out of a bag; but that in cases where
 " the air of a room was to be modified by factitious
 " air, the dilution might, and must be carried much
 " farther; especially in the use of hydro-carbonate, a
 " cubic foot of which will very sensibly affect the air
 " of a room 12 feet square and 8 feet high, as I know
 " by experience. I have not tried the effect of oxy-
 " gene air in similar circumstances, but should expect
 " they would be less sensible. As I conceive Dr. T.
 " to have been led to such dilution by observation as
 " well as theory, I must believe his practice to be
 " right. It is by no means my intention to criticise it.
 " I only wish to explain what I mean by *dilution* in
 " my letter to him."

August 7, 1795.

J. W.

The reader may expect from me some general reflec-
 tions on the effects of airs. But many hundred more
 observations must be collected and compared, before a
 theory can be established. The *immediate* operation of
 oxygene is doubtless to render the action of the heart
 and arteries stronger. Among its remote effects may be
 reckoned an increase of the red colour of the blood,
 where this is pale, and heightening of the complexion.
 The conjecture that it exhausts less than other equal
 stimulants is still undetermined. Other remote effects
 require further inquiry,

Hydro-carbonate

Hydro-carbonate air weakens the action of the arterial system while it is respired. But so would the mere abstraction of oxygene. *Does the venous blood, changed as it is by hydro-carbonate, stimulate the veins more than the dark blood they usually carry?* Does this air stimulate the absorbents? In consumption it has been observed, (and I have several times noticed the fact in the last stage of consumption) that the expectoration is diminished, when hydro-carbonate is administered. Perhaps other phenomena might be brought to support this supposition. But I shall not dwell upon it at present. It may not be quite so easy to determine when the veins are stimulated. Dr. Darwin mentions paleness as sometimes a sign of this.—Less spunginess of the gums, may, I suppose, also be regarded as the sign of a *tonic* effect on the veins; that is, of their action having become permanently stronger.

I know not if any anatomist has yet thought of employing the rubefacient effects of oxygene or hydro-carbonate air, for ascertaining the doubtful structure of certain parts. The latter appears very capable of such application; as the blood tinged by this air passes beyond the reach of the most penetrating injection.

TO WILLIAM REYNOLDS, of *Coalpit Bank*, JOSEPH REYNOLDS, of *Ketley*, and WILLIAM YONGE, of *Shesnal, Shropshire*.

YOU see how far the undertaking, which you so liberally encouraged, has advanced. We all looked for opposition; nor have we been disappointed. But it was hardly to be expected in the shape in which it came from the enraged London Apothecary. Sir Jeremiah's statement of this transaction, I know on the best authority, to be exact. The alternative was offered to one of the patients, whose case you have read above in his own words. As to the young lady, Sir Jeremiah's conjecture was right; she never became the subject of experiment. A few days before her death, her father applied to me in an agony of distress; he inquired if it was possible to assuage her sufferings by any means. But nothing was attempted.

When I write the secret history of the pneumatic practice, I flatter myself I shall afford you some entertainment. Among the Doctors whom high-born patients imagine to opine with full cognizance of the subject, you will wonder to find one taking oxygene for fixed air, and another for the phlogisticated air of Dr. Priestley. Such is the alliance between intrigue and information. How do you think a surgeon in the metropolis went about to apply fixed air to a cancerous ulcer? I should never have guessed. But I am assured that he held the mouth of the retort, spouting acid foam, to the part. The liquor dropped on the lady's cloaths; the sore set to smart: and how could the poor tortured patient refrain from wondering that there should be in the world people wicked enough to recommend such abominable applications? She did not, I dare say, know that her surgeon might have equally succeeded in burning her gown and increasing her sufferings with his vitriolic acid, even though he had not taken the trouble to work it up into froth with fixed air.

In

In spite of such mishaps, aided by the propagation of untruths and the terror of imprisonment, the following reasons persuade me that factitious airs must have a full trial in medicine and surgery. 1. No body will imagine that all the persons who have transmitted to me their narratives, could mistake or would misstate their own feelings. 2. In different cases of the same disease, the results, whether favourable or unfavourable, are analogous. 3. There must be discernment enough out of the profession to enable many persons to perceive that no detriment to the public can result from the inquiry, the trial being perfectly safe with a small portion of prudence and intelligence. 4. Men of science abroad have entered with alacrity into the proposal, and foreign academies are offering premiums for an investigation of the virtues of factitious airs. 5. That ingenious people, which has nearly conquered leisure for cultivating the arts of humanity, will assuredly not neglect a study so closely allied to the pursuits in which it has already excelled. 6. The reports respecting Atwood, Danby, Miss L——, Munt, Mrs. S——, Trayhern, with a variety of asthmatic and phthisical cases, shew that the pneumatic treatment has alone performed or materially promoted the most splendid cures. Now it is evident that the practice is in the most helpless period of its infancy. We scarce know what kinds or combinations of air are best suited to the different stages of different diseases. I do not therefore think, that the facts hitherto observed form any criterion of the merit of the method. Failure should be an incentive to exertion, and partial be regarded as the omen of more complete success, in consequence of the improvements which will infallibly suggest themselves.

If I should publish the secret history, of which I have spoken, would you not advise me to dedicate it to a certain fashionable physician, who has the happiness of being the supreme favourite among fine ladies? Do you think a dedication would be a spell potent enough to confine his tongue within the circle of fact? I am not much inclined to stoop to an exposition of his artifices.

It

It would be difficult to avoid the imbecility of complaint ; and personalities are always more or less odious. So I believe flattery will be the best resource.—As to minor opponents, were I a wit, it would be as easy to manage them by lampoon as their superiors by dedication. Observe for instance how naturally the apothecary's cool and flowing address runs into rhyme.

*You breathe indeed ! do d—mme if you dare,
Take one ounce measure of their cursed air !
Look, here's your bill—pay that, Sir — if you fail,
You take, by G—d, your next night's air in jail !*

T. B.

CLIFTON, SEPT. 14, 1795.

2 NO 64

Medical Pneumatic Institution.

*Between eight and nine hundred Pounds have been subscribed.
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ADDENDA.

THE following letters (except that from Mr. Field) immediately respect the subject of the pamphlet, and I make no apology for adding them here. Mr. Field's is of great importance; and with the facts I have published in my translation of Mr. Gimbernat's Essay on the Femoral Hernia, seems to go near to demonstrate the superior safety of inoculating with diluted matter. Dr. Jenner's opinion of the nature of tubercles I know to have been formed without the knowledge of a similar opinion on carcinoma. It will infallibly give rise to new researches, and if confirmed, may lead to an effectual method of cure. — I am this moment informed that Dr. Girtanner, of Goettingen, has succeeded in the cure of some cases of consumption, by giving one part of carbonic acid air in conjunction with three of atmospheric. He employs a mouth-piece with double valves; such as Mr. W. Yonge projected at the commencement of this practice, and such as Mr. Watt has carried to great perfection: Dr. Lawrence, physician, at Swafham, Norfolk, informs me that he has succeeded in some of those cases where he has used factitious airs. I hope to obtain an account of his experience for a fourth part of these Considerations.

T. B.



Kingscote-House, Feb. 9.

DEAR SIR,

Your proof-sheet has just reached me. I observe an error, *infested* for *infested* (8th line from the bottom, page 178.)

Q

My

My hasty letter of the 29th Jan. would have been more explicit had the idea of hydatids being the cause of tubercles in the lungs been elucidated by a comparison with insect-irritation among vegetables. Here we see a variety of excrescences evidently of insect origin. It is clearly demonstrated in the oak-apple and the gall-nut; but in nothing more beautifully or familiarly than in the mossy excrescence that springs from the wild-rose or the sweet-brier. Your's, &c. E. JENNER.

To Dr. Beddoes.

P. S. If from further investigation it should appear that my opinion of the first existence of tuberculous consumption be just, your mode of treating the disease, especially in its early stages, may prove highly important; as the factitious airs you introduce into the lungs will probably be deleterious to the hydatid, before it is defended from injury by too thick an incrustation. With this view, I long ago directed patients to inhale the vapours of tar, made warm, and diluted with oil of turpentine; and, I think, with manifest advantage. As a demonstration that turpentine is destructive to hydatids, I have a curious fact to make public. There is only room now just to say, that a young man who had hydatids in his kidneys was presently cured by the use of oil of turpentine. It was principally sent into the system through the skin.



DEAR SIR,

Conceiving that the following facts have a strong tendency to support your hypothesis relative to the origin of sea-scurvy, I beg leave to lay them before you.

A very

A very respectable family in this neighbourhood, consisting of an elderly lady and her three daughters, quitted a town residence a few years since and retired into the country. At this time they enjoyed very good health. Not long after they occupied their new habitation an unpleasant change began to appear in the constitution of the eldest of the young ladies, and soon after in the youngest. It first shewed itself in an aversion to exercise and a loss of their accustomed spirits and vivacity. This was followed by the appearance of broad livid spots on the skin, resembling *ecchymoses*, which were surrounded by clusters of small pustules that itched intollerably. Frequent hæmorrhages also took place from the nose and gums ; and one of the ladies, the second sister, (on whose skin no livid spots or pustules had ever appeared) was twice affected with hæmorrhages from the stomach, so profuse that they had nearly proved fatal to her. In no one of the family were the symptoms so violent, the hæmorrhage from the stomach excepted, as in the eldest. She gradually sunk under their pressure, and died. For some months previous to this event, her countenance assumed a bloated appearance, her legs became œdematous, and an ulcer appeared on one of the ancles. Her mental faculties were much weakened, and during the last fortnight of her existence, she lay in a state of perfect insensibility ; for the most part comatose.

It was impossible to perceive these symptoms without being struck with their similitude to those of scurvy, but the probable exciting cause did not occur to me until I perused your publication on the subject,

when it immediately suggested itself that the family were affected with the symptoms above related from breathing air far beneath the purity of that of the common atmosphere. The chimney of the room where they commonly lived was ill constructed and without a free ventilation. I scarcely ever entered the apartment without being sensibly affected with the peculiarity of the smell.—It was not merely that of a smoaky room, but seemed to partake also of the smell occasioned by pouring water on hot coals. The grate made use of was a common Bath stove, in which there was pretty constantly a fire made of pit-coal both in summer and winter.

I remain, Your's, &c. E. JENNER.

To Dr. Beddoes.



Worcester, Feb. 8th, 1796.

DEAR SIR,

Having lent your account of the good effects of diluting variolous matter, for the purpose of inoculation, to my friend, Mr. Field, of Evesham; he returned it to me, with the following letter; which he has allowed me to communicate to you for publication, and which, I am well persuaded, you will think contains information of sufficient consequence to interest practitioners and the community.

I am, &c. W. SANDFORD.

To Dr. Beddoes.

Evesham, Jan. 9th, 1796.

DEAR SIR,

I am much obliged for the perusal of the pamphlet herewith returned.

How

How very frequently do we observe things offered to the public, as new discoveries, which others have long been acquainted with. The first person shall be long in the practice of the improvement, without esteeming it of consequence enough to publish; whilst the person who makes a similar discovery, unconscious of its being known before, presents it to practitioners as new and important.

For upwards of twenty years I have been in the practice of inoculating with variolous matter very much diluted, even beyond what Dr. Beddoes or his correspondents make mention of, and with a success that has often surprized me. The number of patients inoculated by myself and pupils must exceed TWO THOUSAND, without the loss of more than ONE; and I believe I may say with scarce a sinister accident. — Instead of taking a goose-quill *full* of matter at a time, which is frequently done I believe, I have not, I am confident, expended more than a drop or two, for the last twenty years. If I have thirty or forty persons to inoculate at the same time, I only moisten the point of a lancet with the matter, and let it dry on. I always prefer the thin pellucid matter, which is to be obtained in the early stages of the disorder, before maturation and perhaps a day or two after the eruption (if from inoculated patients), to that which is more concocted and purulent, because I find it more infectious and because it dissolves better, and mixes more intimately with any aqueous menstruum. I cannot ascertain precisely the degree of dilution in any instance, but I presume it must in some have been in the proportion of 100 p. to 1.

I remember having some talk with my brother at Worcester on that subject a good while ago, when I
proposed

proposed mixing a single drop of variolous pus with an ounce of warm water ; whether he has considered it or adopted the practice I know not ; for myself I can only say I am not an experimental man, but I doubt not from what I have observed, that matter so diluted would give the disease to as great or greater certainty than thick matter ; and I have every reason to believe, in a milder degree ; for where I have one patient complaining of too large a burden, I have fifty who are not satisfied with their number of pustules : and I have had many who have passed through the disease without being able to discover any eruption, which I should always think fortunate, if my patients or their friends would be of the same opinion.

Though the matter I inoculate with is so much diluted, I use the smallest quantity possible, and scarcely ever draw blood, yet I do not fail to infect once in many hundred times, and am therefore persuaded, that the *absorption* of thin diluted matter is more certain, than *of that* which is thick ; and the puncture I make under the cuticle being so slight as not to produce inflammation or digestion, the matter cannot be thrown off before absorption takes place.

The following circumstance that once occurred to me seems to prove the thin variolous matter to be more infectious than may be generally imagined. Having sent almost all my lancets to London to be ground, and being disappointed in my expectation of receiving them back so soon as I expected, from use or accident the few lancets in my possession were

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at that time unfit for bleeding, except one that had been kept with variolous matter on it for the purpose of inoculation. This lancet I was at last reduced to the necessity of bringing into use for bleeding; previous to which I washed and cleaned it so assiduously, that a lancet just ground could not possibly have appeared more clear and beautiful in its polish. Yet the next person I bled with it called a few days after complaining of a sore arm, when it was evident to me, from the appearance of the orifice, and pain in the axilla, that I had inoculated him by bleeding; and a short time rendered it certain, by the appearance of the small pox, which he had in a very favorable manner.

I remain, &c. B. FIELD.

To Mr. SANDFORD.



While the preceding pages were printing, I heard of the death of a lady, to whose carcinomatous breast carb. acid air had been previously applied. I was told that the breast had healed with prodigious rapidity; and mindful of the propriety of publishing cases where injury has occurred from factitious airs, I wrote to the surgeon who had attended. There seems no connection between the effect of the air and the patient's death: Nor did Dr. Ewart's patient suffer from the healing of her breast. Yet, when an old ulcer is healing apace, would it not be prudent to open an issue?

Newcastle, Feb. 2, 1796.

SIR,

As I only attended Mrs. R—— W——— occasionally, I cannot give you the particulars of her case

so exactly as I could wish. In regard to the effects of the carbonic-acid gas, it appeared to me to relieve the pain. There never was much discharge from the wound; before the application of the gas, it was covered with a brown scab, which came away, and the wound healed. There was a great number of small tubercles all over the breast, and the lymphatic glands in the arm-pit were enlarged; these were *very much reduced* in size, and the pain lessened. As these were caused by the absorption of the matter, I attributed their amendment to the matter being rendered more mild from the application of the gas; an effect I have seen more than twenty years ago from the same application. I cannot attribute her death to the healing of the wound, as the other breast became diseased afterwards, and the discharge from the former was always very trifling. The liver in Mrs. W———'s case, was evidently diseased from the beginning of her complaints, and before there was any appearance of cancer in her breast; and, in my opinion, she was more relieved from small doses of calomel, and steel, than any other medicines. I always thought her taking oxygene was prejudicial. Before she died there appeared a tumour upon the liver, which increased to a large size; but as I had no opportunity of examining the body after death, cannot say any thing more. I have long been of opinion, that all *truly cancerous* complaints are preceded by some of the liver; but to explain my ideas on this subject, would lead me beyond the bounds of a letter.

I am, with much respect, Your's, &c. J. BENT.
To DR. BEDDOES.

